

JCS29 U.S. PTO
01/06/98

Practitioner's Docket No. D--6524A

2/A
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Anticipated Classification of this application:

Class _____ Subclass _____

Prior application: _____

Examiner: _____

Art Unit: _____

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

TRANSMITTAL OF FILING UNDER 37 C.F.R. 1.60(b)

WARNING: A C-I-P (continuation-in-part) **cannot** be filed under 37 CFR 1.60(b).

WARNING: A filing under 37 C.F.R. § 1.60(b) can only be made if the "prior application was a nonprovisional application and a complete application as set forth in § 1.51(a)(1)." 37 C.F.R. § 1.60(b)(1).

WARNING: Filing under 37 CFR 1.60 is permitted only if filed by the same or less than all the inventors named in the prior application. 37 CFR 1.60(b)(3).

WARNING: The filing of an application at the United States stage of an International Application requires an oath or declaration. 37 CFR 1.61(a)(4).

WARNING: The claims of this new application may be finally rejected in the first Office action where all claims of the new application are drawn to the same invention claimed in the earlier application and would have been properly finally rejected on the grounds or art of record in the next Office action if they had been entered in the earlier application. MPEP § 706.07(b).

This is a request for filing a

☐ Continuation

☒ Divisional

application under 37 CFR 1.60, of pending prior application

Serial No. 0 8/ 586, 426 filed on 01/06/96
Date

CERTIFICATION UNDER 37 C.F.R. 1.10*
(Express Mail label number is mandatory.)
(Express Mail certification is optional.)

I hereby certify that this 37 CFR 1.60 request and the documents referred to as attached therein are being deposited with the United States Postal Service on this date _____, in an envelope as "Express Mail Post Office to Addressee," mailing Label Number _____, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

(type or print name of person mailing paper)

Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

***WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(Transmittal of Filing under 37 CFR 1.60(b) [4-3]—page 1 of 9)

of JEFFREY L. PARKER
Inventor(s)
for MULTI-USER CAMERA CONTROL SYSTEM AND METHOD
Title of invention

NOTE: 37 CFR 1.60 permits the omission of a declaration only if the prior application was complete as set forth in 37 CFR 1.51(a), namely, the prior application comprised at least (1) a specification, including a claim or claims; (2) a declaration; (3) drawings when necessary; and (4) the prescribed filing fee. Accordingly, as presently worded, 37 CFR 1.60 does not permit this procedure to be used where the prior application is pending but only the processing and retention fee required by 37 CFR 1.21(f) is paid or where the declaration was not filed.

1. Copy of Prior Application as Filed That is Attached

NOTE: Under 37 CFR 1.60, practice signing and execution of the application by the applicant may be omitted provided the copy is supplied by and accompanied by a statement by the applicant or his or her attorney or agent that the application papers comprise a true copy of the prior application as filed and that no amendments referred to in the declaration filed to complete the prior application introduced new matter therein.

NOTE: This statement need not be verified if made by an attorney registered to practice before the PTO. (37 CFR 1.60(b)).

- ☒ I hereby verify that the attached papers are a true copy of what is shown in my records to be the above identified prior application, including the oath or declaration originally filed. (37 C.F.R. 1.60(b)(2))

The copy of the papers of prior application as filed which are attached are as follows:

- ☒ 15 page(s) of specification
☒ 10 page(s) of claims
☒ 1 page(s) of abstract
☒ 15 sheet(s) of drawing

(also complete part 6 below, if drawings are to be transferred)

- ☒ 1 pages of declaration and power of attorney

(If the copy of the declaration being filed does not show applicant's signature, because the attorney's records do not contain a copy of the signed declaration actually filed for the application, indicate thereon that it was signed and complete the following:)

- ☐ In accordance with the indication required by 37 C.F.R. 60(b), my records reflect that the original signed declaration showing applicant's signature was filed on _____.
- ☐ The amendment referred to in the declaration filed to complete the prior application and I hereby state, in accordance with the requirements of 37 CFR 1.60(b), that this amendment did not introduce new matter therein.

2. Amendments

WARNING: "The claim of a new application may be finally rejected in the first Office action in those situations where (1) the new application is a continuing application of, or a substitute for, an earlier application, and (2) all the claims of the new application (a) are drawn to the same invention claimed in the earlier application, and (b) would have been properly finally rejected on the grounds or art of record in the next Office action if they had been entered in the earlier application." MPEP § 706.07(b).

- ☐ Cancel in this application original claims _____ of the prior application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- ☒ A preliminary amendment is enclosed. (Claims added by this amendment have been properly numbered consecutively beginning with the number next following the highest numbered original claim in the prior application.)

NOTE: Only amendments reducing the number of claims or adding a reference to the prior application (§ 1.78(a)) will be entered before calculating the filing fee and granting the filing date. 37 CFR 1.60(b)(4).

NOTE: "When filing under Rule 1.60 retain at least one original claim from the patent application to assure a complete application." Notice of March 3, 1986 (1064 O.G. 37-38).

3. Petition for Suspension of Prosecution for the Time Necessary to File an Amendment

NOTE: Where it is possible that the claims on file will give rise to a first action final for this continuation application and for some reason an amendment cannot be filed promptly (e.g., experimental data is being gathered) it may be desirable to file a petition for suspension of prosecution for the time necessary).

(check the next item, if applicable)

- ☐ There is provided herewith a Petition To Suspend Prosecution For The Time Necessary to File An Amendment (New Application Filed Concurrently).

4. Information Disclosure Statement

(check this item, if applicable)

- ☐ An information disclosure statement is submitted herewith.

8. Priority—35 U.S.C. 119

- ☐ Priority of application Serial No. 0 / _____ filed on _____ in _____ is claimed under 35 U.S.C. 119. Country _____
- ☐ The certified copy has been filed in prior U.S. application Serial No. 0 / _____ on _____
- ☒ The certified copy will follow.

9. Relate Back—35 U.S.C. 120

- ☒ Amend the specification by inserting, before the first line, the following sentence:
 "This is a
☐ continuation
☒ divisional
 of copending application(s)
☒ Serial number 0 8/ 586,426 _____ filed on 01/06/96 which is a continuation of Ser. No. 08/255,257 filed on 06/07/94".
☐ International Application _____ filed on _____ that designated the U.S."

NOTE: The proper reference to a prior filed PCT application that entered the U.S. national phase is the U.S. serial number and the filing date of the PCT application which designated the U.S.

10. Inventorship Statement

NOTE: "If the continuation or divisional application is filed by less than all the inventors named in the prior application, a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation or divisional application." 37 CFR 1.60(b)(4) [emphasis added].

(complete appropriate items (a) and (b))

- (a) With respect to the prior copending U.S. application from which this application claims benefit under 35 U.S.C. 120, the inventor(s) in this application is (are):

(complete applicable item below)

- ☒ the same.
☐ less than those named in the prior application. It is requested that the following inventor(s) identified above for the prior application be deleted:

 (type name(s) of inventor(s) to be deleted)

- (b) The inventorship for all the claims in this application are

- ☒ the same.
☐ not the same. And an explanation, including the ownership of the various claims at the time the last claimed invention was made, is submitted.

(Transmittal of Filing under 37 CFR 1.60(b) [4-3]—page 5 of 9)

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Variable	Mean	SD	Min	Max
Age	34.5	10.2	21	55
Gender	Male	Female		
Marital status	Married	Single		
Education	High school	College		
Occupation	Manager	Worker		
Income	Low	High		
Health status	Good	Poor		
Stress level	Low	High		
Life satisfaction	Low	High		
Resilience	Low	High		
Optimism	Low	High		
Self-efficacy	Low	High		
Perceived social support	Low	High		
Perceived stress	Low	High		
Perceived life satisfaction	Low	High		
Perceived resilience	Low	High		
Perceived optimism	Low	High		
Perceived self-efficacy	Low	High		
Perceived social support	Low	High		
Perceived stress	Low	High		
Perceived life satisfaction	Low	High		
Perceived resilience	Low	High		
Perceived optimism	Low	High		
Perceived self-efficacy	Low	High		
Perceived social support	Low	High		
Perceived stress	Low	High		
Perceived life satisfaction	Low	High		
Perceived resilience	Low	High		
Perceived optimism	Low	High		
Perceived self-efficacy	Low	High		
Perceived social support	Low	High		
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Perceived social support	Low	High		
Perceived stress	Low	High		
Perceived life satisfaction	Low	High		
Perceived resilience	Low	High		
Perceived optimism	Low	High		
Perceived self-efficacy	Low	High		
Perceived social support	Low	High		
Perceived stress	Low	High		
Perceived life satisfaction	Low	High		

- is attached. A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

NOTE: When an assignee files a . . . divisional application (under . . . 1.60 . . .) reference may be made to a statement filed under 37 CFR 3.73(b) in the parent application, or a copy of that statement may be filed. Notice of April 30, 1993, 1150 O.G. 62-64.

☐ Not Enclosed

☐ No filing fee is submitted.
(This and the surcharge required by 37 CFR 1.16(e) can be paid subsequently).

- NOTE: 37 CFR 1.21(f) establishes a fee for processing and retaining any application which is abandoned for failing to complete the application pursuant to 37 CFR 1.53(d) and this, as well as the changes to 37 CFR 1.53 and 1.78 indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid or else the processing and retention fee of § 1.21(f) must be paid within 1 year from notification under § 53(d).

13. Method of Payment of Fees

- NOTE: Fees should be itemized in such a manner that is clear for which purpose the fees are paid. 37 CFR 1.22(b).

FORM 4-3

14. Authorization To Charge Additional Fees

WARNING: If no fees are being paid on filing do not complete this item.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges if extra claim charges are authorized.

- ☒ The Commissioner is hereby authorized to charge the following additional fees which may be required by this paper and during the entire pendency of the application to Account No. 02-0660

☒ 37 C.F.R. 1.16 (a), (f) or (g) (filing fees)

☒ 37 C.F.R. 1.16 (b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 CFR 1.16(d)) it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

☒ 37 C.F.R. 1.17 (application processing fees)

WARNING: While 37 CFR 1.17(a), (b), (c) and (d) deal with extensions of time under § 1.136(a) this authorization should be made only with the knowledge that: "Submission of the appropriate extension fee under 37 CFR 1.136(a) is to no avail unless a request or petition for extension is filed." [emphasis added]. Notice of November 5, 1985 (1060 O.G. 27).

☐ 37 C.F.R. 1.18 (issue fee at or before mailing Notice of Allowance, pursuant to 37 CFR 1.311(b)).

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 CFR 1.311(b)).

NOTE: 37 CFR 1.28(b) requires "Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying or at the time of paying . . . issue fee. . ." From the wording of 37 CFR 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

15. Power of Attorney

- ☒ The power of attorney in the prior application is to

Arthur G. Yeager

19,892

Attorney Earl L. Tyner

17,045 Reg. No.

- a. ☒ The power appears in the original papers in the prior application.
- b. ☐ Because the power does not appear in the original papers, a copy of the power in the prior application is enclosed.
- c. ☐ A new power has been executed and is attached.
- d. ☒ Address all future communications to

(item d may only be completed by applicant, or attorney or agent of record)

16. Maintenance of Copendency of Prior Application

(this item must be completed and the papers filed in the prior application if the period set in the prior application has run)

- ☐ A petition, fee and response has been filed to extend the term in the pending prior application until _____.

NOTE: The PTO finds it useful if a copy of the petition filed in the prior application extending the term for response is filed with the papers constituting the filing of the Continuation Application. Notice of November 5, 1985 (1060 O.G. 27).

- ☐ A copy of the petition for extension of time in the prior application is attached.

17. Conditional Petition for Extension of Time in Prior Application

(complete this item and file conditional petition in the prior application if previous item not applicable)

- ☐ A conditional petition for extension of time is being filed in the pending parent application.

NOTE: The PTO finds it useful if a copy of the petition filed in the prior application extending the term for response is filed with the paper constituting the filing of the continuation application. Notice of Nov. 5, 1985 (1060 O.G. 27).

- ☐ A copy of the conditional petition for extension of time in the prior application is attached.

18. Abandonment of Prior Application *(if applicable)*

WARNING: Do not complete this item if the application being filed is a divisional of the prior application that is not being abandoned.

NOTE: "A registered attorney or agent acting under the provisions of § 1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application." 37 CFR 1.138.

- ☐ Please abandon the prior application at a time while the prior application is pending or when the petition for extension of time or to revive in that application is granted and when this application is granted a filing date so as to make this application copending with said prior application.

19. Notification in Parent Application of the Filing of This Continuation Application

- ☐ A notification of the filing of this continuation is being filed in the parent application from which this application claims priority under 35 U.S.C. § 120.

(Transmittal of Filing under 37 CFR 1.60(b) [4-3]—page 8 of 9)

20. Statement by Assignee (if applicable)

- ☐ In accordance with 37 CFR 3.73, I have reviewed the evidentiary documents establishing my/our ownership of the application identified herein, and certify that to the best of my/our knowledge and belief, title is with me/us who seek to take action.

- ☐ Assignment submitted herewith for recordal

I hereby declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

(type or print name of person signing
declaration)

Dec. 31, 1997

Date

Arthur D. Yager
Signature

Suite 1305, 112 W. Adams St.

P.O. Address of Signatory

Jacksonville, FL 32202-3853

- ☐ Inventor
☐ Assignee of complete interest

(if applicable)

Tel. No.: (904) 355-9631

Reg. No. 19,892

- ☐ Person authorized to sign on behalf of
assignee

- ☒ Practitioner of record

- ☐ Filed under Rule 34(a)

Registration No.:

Customer No.:

(complete the following, if applicable)

(type name of assignee)

Title of person authorized to sign on behalf
of assignee

Address of assignee

Assignment recorded in PTO on

Reel

Frame

The statement under 37 C.F.R. 3.73(b)

- ☐ has been filed in the parent application.
☐ a copy of the statement previously filed in the parent application is attached.

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Variable	Mean	SD	Min	Max
Age	21.5	2.5	18	25
Gender	0.5	0.5	0	1
Marital status	0.1	0.3	0	1
Religion	0.5	0.5	0	1
Education	12.5	1.5	10	15
Income	1.5	0.5	1	2
Health status	0.5	0.5	0	1
Employment status	0.5	0.5	0	1
Family size	3.5	1.5	2	5
Urban/rural	0.5	0.5	0	1
Marital satisfaction	4.5	1.5	3	6
Family satisfaction	4.5	1.5	3	6
Life satisfaction	4.5	1.5	3	6
Health satisfaction	4.5	1.5	3	6
Employment satisfaction	4.5	1.5	3	6
Family size satisfaction	4.5	1.5	3	6
Urban/rural satisfaction	4.5	1.5	3	6
Marital satisfaction (subscale)	4.5	1.5	3	6
Family satisfaction (subscale)	4.5	1.5	3	6
Life satisfaction (subscale)	4.5	1.5	3	6
Health satisfaction (subscale)	4.5	1.5	3	6
Employment satisfaction (subscale)	4.5	1.5	3	6
Family size satisfaction (subscale)	4.5	1.5	3	6
Urban/rural satisfaction (subscale)	4.5	1.5	3	6
Marital satisfaction (subscale)	4.5	1.5	3	6
Family satisfaction (subscale)	4.5	1.5	3	6
Life satisfaction (subscale)	4.5	1.5	3	6
Health satisfaction (subscale)	4.5	1.5	3	6
Employment satisfaction (subscale)	4.5	1.5	3	6
Family size satisfaction (subscale)	4.5	1.5	3	6
Urban/rural satisfaction (subscale)	4.5	1.5	3	6

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: Examiner:

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IN THE CLAIMS

Cancel Claims 1-11, 13-50.

Add the following Claims 51-108.

SUB C1
51. A method of controlling the field of view of any camera in a system including at least one camera, an automatic control system for controlling the field of view of the camera and at least two control devices capable of sending commands to the automatic control system for controlling the field of view of the camera comprising the steps of:

A. remembering at least one specific field of view position of the camera, each field of view position being associated with a respective control device;

B. issuing a command from one control device;

C. identifying the control device that issued the command in step B; and

D. automatically moving the field of view of the camera to the field of view position remembered in step A and associated with the control device identified in step C.

52. The method of Claim 51 wherein step A includes the steps of:

E. issuing commands from each of the control devices to remember a field of view position of the camera; and

F. remembering the control device that issued the respective command in step E.

53. The method of Claim 52 wherein step D includes the step of:

G. moving the field of view of the camera to the field of view position remembered in step E associated with the remembered control device of step F that issued the respective command.

54. The method of Claim 51 wherein step A includes the step of:
E. remembering the position of the camera field of view with respect to a known reference.

55. The method of Claim 54 wherein step E includes the step of:
F. remembering the position of the camera field of view in a first plane.

56. The method of Claim 54 wherein step E includes the step of:
F. remembering the position of the camera field of view in two planes.

57. The method of Claim 51 wherein step A includes the steps of:
E. remembering specific variables of the camera for each field of view remembered; and
F. automatically recalling the remembered variables when the field of view is recalled in step D.

58. The method of Claim 57 wherein step E includes the step of:
G. remembering the iris setting of the camera field of view.

59. The method of Claim 57 wherein step E includes the step of:
G. remembering the zoom perspective of the camera field of view.

60. The method of Claim 59 further including the step of:
H. automatically maintaining the zoom perspective remembered in step G when the camera field of view is moved in step D.

61. The method of Claim 57 wherein step E includes the steps of:
G. remembering the position of the camera field of view in at least one plane;

H. remembering the zoom perspective of the camera field of view; and

I. remembering the iris setting of the camera field of view.

62. The method of Claim 61 wherein step D includes the steps of:

J. moving the position of the camera field of view to the remembered position of step G;

K. changing the zoom perspective of the camera to the remembered perspective of step H; and

L. changing the iris setting of the camera to the remembered setting of step I.

63. The method of Claim 51 further including the step of:

E. issuing a command to override subsequent commands from other control devices affecting control of the field of view of the camera.

64. The method of Claim 63 further including the step of:

F. issuing a command to restore the responsive capability of the means for controlling the field of view to commands from other control devices.

65. The method of Claim 51 further including the steps of:

E. controlling the field of view variables of the camera;

F. remembering the field of view variables of the camera that are associated with each field of view position remembered in step A; and

G. automatically establishing for the camera the field of view variables remembered in step F for the field of view position remembered in step A whenever the field of view position is recalled.

66. The method of Claim 51 wherein step A includes the step of:

E. remembering a specific field of view position that can be recalled by a command from any control device.

67. The method of Claim 66 wherein step E includes the step of:

F. issuing a command by a control device to change the field of view to the specific field of view position remembered in step A.

68. A method of controlling the field of view of any camera in a system including at least two cameras, an automatic control system for controlling the field of view of each camera and at least two control devices capable of sending commands to the automatic control system for controlling the field of view of the respective camera comprising the steps of:

A. remembering at least one field of view position of each camera, each field of view position being associated with a respective control device;

B. issuing a command from a control device;

C. identifying the control device that issued the command in step B;

D. associating each control device with a respective camera; and

E. changing the field of view position of the camera associated with the field of view remembered in step A to provide the field of view position remembered in step A associated with the control device identified in step C.

69. The method of Claim 68 wherein step A includes the steps of:

F. issuing commands from each of the control devices to remember different field of view positions of each camera; and

G. remembering the control device that issued the respective command.

70. The method of Claim 69 further including the step of:

H. automatically recalling the remembered field of view when the field of view is moved in step E.

71. The method of Claim 70 wherein step A includes the step of:

I. remembering the zoom perspective of each camera field of view.

72. The method of Claim 68 further including the steps of:

F. providing by each camera a video output signal; and

G. selectively providing a camera video output signal from a camera.

73. The method of Claim 72 wherein the step G includes the step of:

H. automatically selecting the camera video output signal associated with the camera of step E.

74. The method of Claim 68 wherein step A includes the step of:

F. remembering a specific field of view position that can be recalled by a command from any control device.

75. The method of Claim 74 wherein step F includes the step of:

G. issuing a command by a control device to change the field of view to the specific field of view position remembered in step A.

76. The method of Claim 68 further including the steps of:

F. selectively enabling the transmission of an audio signal associated with one or more control devices; and

G. automatically selecting which control device will transmit an audio signal.

77. The method of Claim 76 further including the step of:

H. automatically selecting the audio signal from the control device identified in step C.

78. The method of Claim 77 wherein step H includes the step of:

I. automatically disabling audio signals associated with the control devices not selected.

79. The method of Claim 76 wherein step G includes the step of:

H. automatically selecting audio signals associated with all control devices wherever any control device is identified in step C.

80. The method of Claim 76 wherein step F includes the steps of:

H. establishing a plurality of groups of control devices; and

I. selectively enabling audio signals associated with at least one group of control devices.

81. The method of Claim 80 wherein step G includes the step of:

J. automatically selecting the audio signals associated with the group of control devices enabled in step H.

82. The method of Claim 80 wherein step H includes the step of:

J. automatically selecting the audio signals associated with the group of control devices to which the control device of step C belongs.

83. The method of Claim 68 further including the steps of:

F. providing an automatic tracking system for the at least two cameras;

G. issuing a second command for automatic tracking of the control device that issued the command of step B; and

H. controlling the field of view in step E to

automatically track the control device of step B.

84. The method of Claim 83 wherein step G includes the step of:

I. issuing a command by a control device to provide the automatic tracking of the control device only for as long as the command is being continuously issued.

85. The method of Claim 83 wherein step B includes the step of:

I. issuing a command by another control device to provide automatic tracking of the other control device and the cessation of automatic tracking of the one control device.

86. The method of Claim 83 further including the steps of:

I. providing by each camera a video output signal; and
J. selectively providing a camera video output signal from a camera.

87. The method of Claim 86 wherein step J includes the step of:

K. automatically selecting the camera video output signal associated with the camera of step D.

88. The method of Claim 83 wherein step A includes the step of:

I. remembering a specific field of view position for at least one of the cameras that can be recalled by a command from any control device.

89. The method of Claim 88 wherein step I includes the step of:

J. issuing a command by any control device to change the field of view to the specific field of view position remembered in step A.

90. The method of Claim 83 further including the step of:

I. issuing a command to override subsequent commands affecting the control of the field of view of the camera.

91. The method of Claim 90 further including the step of:

J. issuing a command to restore the responsive capability to commands from other control devices.

92. The method of Claim 83 further including the steps of:

I. remembering field of view variables for the control device being tracked; and

J. recalling remembered variables when the control device is being automatically tracked.

93. The method of Claim 83 further including the step of:

I. remembering variables associated with automatic tracking of the control device.

94. The method of Claim 93 wherein step I includes the step of:

J. remembering the location in the field of view that the control device is to be maintained during automatic tracking.

95. The method of Claim 83 wherein step G includes the step of:

I. issuing a command by a control device to provide the automatic tracking of the control device only for as long as the command is being continuously issued.

96. The method of Claim 83 wherein step G includes the step of:

I. issuing a command by another control device to provide for automatic tracking of the other control device and the cessation of automatic tracking of the one control device.

97. The method of Claim 83 wherein step H includes the step of:
I. ceasing the automatic tracking of the control device that issued the command when the tracking system has moved to the desired location with the field of view of the camera relative to the control device.

98. The method of Claim 83 further including the steps of:
I. selectively enabling the transmission of an audio signal associated with one or more control device; and
J. automatically selecting which control device will transmit an audio signal.

99. The method of Claim 98 further including the step of:
K. automatically selecting the audio signal from the control device identified in step C.

100. The method of Claim 99 wherein step J includes the step of:
L. automatically disabling audio signals associated with the control device not selected.

101. The method of Claim 98 wherein step J includes the step of:
K. automatically selecting audio signals associated with all control devices wherever any subject is tracked.

102. The method of Claim 98 wherein step J includes the steps of:
J. establishing a plurality of groups of control devices; and

K. selectively enabling audio signals associated with at least one group of control devices.

103. The method of Claim 102 wherein step J includes the step of:

L. automatically selecting the audio signals associated with the group of control devices enabled in step K.

104. The method of Claim 102 wherein step L includes the step of:

M. automatically selecting the audio signals associated with the group of control device to which the control device being tracked belongs.

105. A system for controlling the field of view control variables of any camera in the system comprising at least one camera, automatic control means for adjusting said field of view control variables of said camera and at least two control devices for sending commands to said automatic control means thereby adjusting said field of view, said automatic control means including circuit means for identifying which said control device has sent a command to said automatic control means.

106. The system as defined in Claim 105 wherein said circuit means includes memory means for remembering specific variables associated with each field of view.

107. The system as defined in Claim 105 wherein said automatic control means includes memory means for identifying each said command sent by each said control device, said command including identity information indicative of respective said control device which sent said command, said automatic control means remembering said identify information to enable said field of view to be moved to one of the fields of view remembered.

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108. A method of controlling the field of view of any camera in a system including at least one camera, an automatic control system for controlling the field of view of the camera and at least two control devices capable of sending commands to the automatic control system for controlling the field of view of the camera comprising the steps of:

A. remembering the field of view position of at least one control device by issuing a command from a communication device to the means for controlling the field of view;

B. automatically identifying by the automatic control system the field of view variable of the camera the control device associated with variables remembered in step A;

C. issuing a command from the control device identified in step B; and

D. automatically enabling the field of view of the camera to the field of view remembered in step A and associated with the control device identified in step B.

REMARKS

The Claims 51-108 are believed to be patentable over the art of record and should be found to be allowable.

The Examiner is authorized to cancel Claim 12 by Examiner's Amendment.

Respectfully submitted,

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MULTI-USER CAMERA CONTROL SYSTEM AND METHOD

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to multi-user camera system control particularly for use in video teleconferencing systems, distance learning, audience response, and particularly to user controls for video cameras and associated apparatus in these systems, as well as systems employing automatic tracking capabilities.

Prior Art

Current multi-user camera systems in applications such as video conferencing, distance learning, etc. employing cameras have a single point of centralized control with some limited pan, tilt, zoom, and location presents. Having a centralized control generally requires a facilitator to act as a camera operator. This facilitator must decide who or what will be displayed, select a camera, pan, tilt, and zoom the camera and will require repetition of this process each time someone new takes the floor. An alternative method is to use a wide angle shot of the entire group of people. The primary drawback of this alternative approach is that no one can be seen clearly in such a wide field of view. The facilitator has one more level of control that attempts to solve the multi-user problems; the location presets. By using presets, the facilitator can press a button to position a camera to predetermined pan, tilt, and zoom settings, and must still decide when, who and what to display. These location presets still require the presence of the facilitator who must still attempt to follow the conversation(s) via the use of location presets for the participants in the group.

What is needed is a system that solves these problems by providing a distributed control architecture to the participants, in place of or to compliment a centralized controller for the facilitator. Each person involved would have a single person user interface which allows control of the desired view of each person or anything else to be displayed. When a person wants to speak, a command can be sent and a camera is directed to such person,

A "This is a Division of Serial Number 08/186,426 filed on 01/06/95 which is a continuation of Ser. No. 08/255,257 filed on 06/07/94"

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allowing a face to face conversation or allowing the display of of a predetermined view. Now each person can be seen clearly and at the proper time. This eliminates the facilitator's guess work of who or what to display. One-on-one conversations now become the rule rather than the exception. When appropriate, the entire group can be displayed by issuing the appropriate command from any of the individual controllers.

The desired system should include automatic tracking capability so that when the appropriate command or commands are sent, the system will automatically locate the user controller, automatically select a camera, and automatically select the desired field of view of the camera based on the user's location in the system area. Also, pan, tilt, zoom and iris of the camera may be made and remembered automatically without the assistance of the facilitator.

SUMMARY OF THE INVENTION

In one aspect of the present invention there is provided a method of controlling the field of view variables of a camera in a system including a camera, a means for adjusting the field of view variables of the camera and at least two remote control devices capable of sending commands to the means for adjusting the field of view variables of the camera comprising the steps of: remembering at least two specific fields of view of the camera; issuing a field of view command from at least one remote control device; and moving the field of view of the camera to one of the fields of view so remembered. In other aspects of the invention, commands are issued from each of the remote control devices to remember different fields of view of the camera; and remembering the remote control device that issued the respective command. Other steps include moving the field of view of the camera to the field of view remembered associated with the remembered remote control device that issued the respective command; remembering the position of the camera with respect to a known reference; remembering the position in a first plane; and remembering the position of the camera in another plane.

The present invention also provides the steps of: remembering the zoom perspective of the camera; remembering the focus position of the camera; remembering the iris position of the camera; moving the position of the camera to the remembered position; changing the zoom perspective of the camera to the remembered position; moving the focus position of the camera to the remembered position; and issuing a command by one of the remote control devices to override commands from other remote control devices affecting the field of view of the camera.

A further aspect of the present invention provides a method of controlling the field of view controls of each camera in a system including at least two cameras, a means for controlling the variables that define the field of view of each camera and at least two remote control devices capable of sending commands to each means for controlling the field of view variables of the respective camera comprising the steps of remembering at least one field of view of each camera; issuing a field of view variable command from at least one of the remote control devices to the means of controlling the cameras; and changing the field of view variables of the camera associated with the field of view remembered to provide the field of view remembered. Other steps include issuing commands from each of the remote control devices to remember a different field of view of the camera; remembering the remote control device that issued the respective command; changing the field of view of the respective camera to the field of view remembered associated with remembered remote control device that issued the respective command; remembering the position of each camera with respect to a known reference; remembering the position of each camera in two planes; remembering the zoom perspective of each camera; remembering the iris position of each camera; changing the position of the camera associated with the remembered field of view to the remembered position; changing the zoom perspective of the camera associated with the remembered field of view to the remembered perspective; and changing the iris position of the camera associated with the remembered field of view to the remembered position. Also, a command may be issued by one of the remote control devices to override commands from other remote control devices affecting the field of view of any camera, and the method may include automatic tracking.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features, which are believed to be characteristic of this invention, are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a front elevational view of the personal controller or locator used in the present invention;

FIG. 2 is a pictorial block diagram of the electronic circuitry of the personal locator of Fig. 1;

FIG. 3 is a block diagram of one configuration of the multi-user camera system of the present invention;

FIG. 4 is a block diagram of another embodiment of the system of the present invention;

FIG. 5 is a block diagram of the micro-computer used in the locator of Fig. 1;

FIGS. 6-14 are flowcharts 1-9 illustrating some of the programming of the present invention;

FIGS. ^{15, 15A and 15B, and 16 and 18 16A}~~15-16~~ are schematics of the electronic circuitry around which the personal controllers are built;

FIG. 17 is a front elevational view of another embodiment of the personal locator in accord with the present invention; and

FIG. 18 is a front elevational view of a base unit in accord with the present invention with an integral camera.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

General Capability

The present invention employs a remote tracking system as an option for applications which require remote control of the field of view of a moving picture camera, such as video cameras. A brief review of the design and operation of the prior patent and applications, U. S. Patent No. 5,268,734, and Ser. Nos. 07/736,729; 07/875,078; and 08/078,434, will be helpful in understanding the technology described herein.

The base unit of the tracking system transmits an infrared signal through a rotating set of lenses or signal shapers

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designed to structure the IR beam in a predetermined process. The base unit includes a microprocessor, which monitors indicating circuitry to calculate the error from exact alignment between the base unit and the remote unit. The remote unit transmits a signal to the base unit containing information regarding the received IR signal, particularly the instantaneous strength of the signal so that exact alignment may be achieved. The base unit contains computational circuitry to calculate the angle of the structured IR beam relative to the reference angle, usually 0 degrees or exact alignment. When the received IR signal strength reaches a maximum or "peak" value, the angle of the IR beam relative to the reference angle will be determined by the base unit circuitry. The base unit, upon which a video camera is mounted or an integral part thereof, will be moved according to the programming of the system. Location PRESETS and OFFSETS from the center alignment of the system is also provided.

The remote unit in the present invention is included in a hand-manipulated personal controller or locator used by the subject, and it includes optional RF and audio circuitry. The remote unit communicates infrared tracking information and other signal data to the base unit as well as commands.

System capability also includes field of view controls. A tracking window is defined in the system as the number of degrees from a reference of 0 degrees that the subject may move before the base unit moves. The size of a window may be programmed by the user or automatically controlled by the system. Window size is one of several variables that can be provided for.

The system may provide for "crossover" control, that is movement back and forth from a zero error position into two "error zones", each defined by the respective zero reference planes. These programs provide for no base unit movement during the automatic tracking mode if "crossover" or the "crossover and return" occurs within a predetermined time

period, which, preferably, is 1 second. This program also prevents unnecessary movement of the base unit and provides a smoother picture taking by the camera.

The autotrack algorithms are stored in ROM, and operate to track the remote unit if the angular error between the units is determined to exceed a preset number of degrees.

The base unit will not move to correct the angular error if the subject is within the preset window. If the subject moves out of the preset window, the base unit will move to correct the error. When the error is less than a predetermined amount and the subject is not moving, the window will be reinstated and the base unit will cease movement until the error exceeds the predefined window. A dual window method utilizing a time-based ramp-up method of handling the transition between a stationary situation and the autotracking mode may also be included.

As discussed in the cited patent and applications, the PAN and TILT optics are rotated by a mechanical drive, which also supplies interrupts 1 and 2 to the microprocessor for the START and END of PAN and TILT respectively. In the prior and present system, PAN scans alternate with TILT scans. For each scan, the IR output signal strength is known and the return signal contains information regarding the signal strength at the remote unit. Using the inverse square law (see Application Ser. No. 08/078,434) as understood in the art, it is possible to compute the distance between the remote unit and the base unit to a given accuracy depending upon the system specifications.

The previous system also includes control capability for the ZOOM, FOCUS and IRIS functions of a camera, as in the above co-pending applications, and the integration of those functions with the other capabilities of the present system.

SYSTEM DESCRIPTION

Personal Locator:

The system 10 employs a keypad device 11, which is a

controller and locator, and referred to as a personal locator (PL) in the present system. The PL device 11 always contains the micro-controller 12, the user interface 15, and the communication circuitry 13. The audio 16 and tracking/distance circuitry 17 is optional in a basic configuration of the PL device 11, but are key components of the present system. The electronic circuitry that is contained in a PL device 11 includes all of the necessary components for basic keypad operation as well as the audio 16 and tracking/distance circuitry 17. The PL devices 11 constructed in this manner are hardwired together via input/output interfaces 18. It should be noted that the wire between keypads 19 could be replaced with either an infrared or RF transceiver 20 making the system 10 wireless (FIGS. 1, 2, 5).

Micro-Controller:

This micro-controller circuitry 12 contains a microprocessor with internal RAM and ROM, external NVRAM, and the appropriate input/output circuitry. The micro-controller (uC) 12 monitors the user interface 15 and communications 13 to coordinate the Personal Locator internal activities and has the ability to enable/disable the local audio 16 and tracking 17 inputs. The uC 12 is specifically responsible for user programming, user displays, real-time user input, command generation/reception, and program execution.

User Interface:

The interface 15 consists of a button keypad 19, switches 36-44, and indicator lights 19'. The micro-controller 12 uses a button matrix scanning scheme to monitor the button keypad 19. The uC 12 also monitors a program switch 36 for functions which are determined by the current program. The keypad 19 is flexible enough to be configured to support other user interface options such as a LCD display and touch screen input with minor hardware and software changes.

Communications:

The hardware electrical configuration of the communication interface 13 is an RS-485 type transceiver and is combined with the hardware and software of uC 12 to create a multiple access, collision detect transceiver, serial communications bus 27.

Audio:

The audio microphone and associated audio circuitry 16 can provide sound-at-the-source by issuing a command or commands to the keypad 19. The audio circuitry 16 includes the appropriate amplifiers and filters to deliver audio via a differential hardware link. The differential link is designed in such a manner to support a single-ended or non-differential audio link as well.

Tracking/Distance:

The tracking/distance circuitry 17 is similar to that found in the patent and applications cited above, and allows a base unit 21 to locate and track the user with a known or pre-determined field of view. The circuitry 17 has provisions for as many tracking sensors as necessary, and the circuitry to enable or disable the tracking signal for each keypad 19 on the bus 27. The tracking signals are carried differentially between keypads 19 and other devices, but are also designed to support single-ended (non-differential) methods. Alternatively, as discussed in the referenced patent and applications, a pair of spaced PAN assemblies allows for distance calculation in accord with the usual trigonometric principles as understood in the art.

System Operation

In the system shown in FIG. 3, the PLs 11 numbered 1, 2 and 3 are configured to incorporate a button keypad 19, interface 15, a microcontroller 12, and a hardwired transceiver 14 as shown in FIG. 2 and operate in accordance with Flowchart 1. The system contains a base unit 21 that has communication circuitry 22 for allowing the PLs 11 to send and receive digital communications from the base unit 21 using an RS-485 serial link 27. Communication circuitry 22 also receives audio and tracking 19 signals from the keypads if these options are used. Base unit 21 is configured to control camera 23 and lens 24 and contains an audio output 25, an RS-232 communication port 26 and configuration switches (not shown).

The system 10 setup is accomplished by setting the base unit 21 address on the communication bus 27 using the RS-232 port 26 and a computer or similar device with a compatible port. This base unit 21 address also represents the selected camera 23 address, the camera 23 being mounted on or an integral part of base unit 21 (FIG. 18). Next, each PL 11 is programmed via the keypad 19 to have a unique bus address. Then, the base unit 21 and camera 23 bus address that is to be controlled by the PL 11 is entered from the keypad 19. The selected camera's field of view variables, PAN, TILT, ZOOM, FOCUS and/or IMAGE (LIGHT/DARK) [IRIS, SHUTTER SPEED, GAIN, WHITE BALANCE] would then be adjusted from the PL 11 using the button switches 37-44. The next step is to issue a command to store the variable settings from the PL 11. The procedure for the PL 11 setup is outlined in Flowchart 2. Each PL 11 in the system is setup in the same manner.

When a user wants to display the stored field of view, the PL 11 switch or MY TURN button 41 is pressed on the keypad 19. Base unit 21 receives the command from the PL 11 to position the camera 23 and its lens 24 to produce the desired pre-programmed field of view. When another user wishes to take the floor, the MY TURN button 41 is pressed on the other's PL 11 and the system recalls the pre-programmed field of view for such other user.

The keypads 19 also contain an ALL button 42 which causes the system to select another pre-programmed field of view, The ALL VIEW is programmed using the procedure outlined in Flowchart 3 and is accessible to any keypad 19 of PL 11. This basic system operation is detailed in Flowchart 4.

FIG. 4 is a diagram of the system 10' with the addition of a video switcher 31 responsive to commands and a second base unit 21 and camera 23. The camera video outputs 28 are connected to the video inputs 35 of the video switcher 31. When a locator or MY TURN button 41 is pressed, the PL keypad 19 issues the appropriate system commands to recall the desired field of view of the selected camera 23. Along with the aforementioned commands, the PLs 11 automatically issue commands to the base unit 21 which in turn issue the commands to video switcher 31 to route the selected camera video to the system video output 28 at the appropriate time (see Flowchart 4). The video switcher 31, such as the one employed in this system is also capable of a picture-in-picture display. This system may also be programmed to automatically display the selected camera video as the main display and another field of view, computer screen, whiteboard, etc., such as the picture-in-picture.

This system has provisions for a "master" PL keypad 19 that is capable of issuing lockout commands to the other keypads 19 on the communication bus 27. Any PL 11 can be configured to be a master by using the program switch 36 and button keypad 19 on the PL 11 (see Flowchart 5). Employing a hierarchical address format, the system uses the keypad 19 addresses to determine priority, meaning that the master keypad 19 is addressed above its slaves. When a master MY TURN button 41 is pressed, the system 10 displays the master's pre-programmed field of view and locks out all of the PL 11 slaves addressed below the master. When the master keypad's MY TURN button 41 is pressed again, all of the PL slaves addressed below the master are released (see Flowchart 6). This arrangement

allows the system to support multiple master PLs 11 in a user configurable format. The master PL 11 with the highest address is the overall system master and can "lockout" all other master and slave keypads 19 on the RS-485 bus 27.

The keypad 19 of PL 11 can also issue lock and unlock commands only. These commands are not linked to a predetermined field of view and can be issued by any keypad configured as a master by pressing the MY TURN and ALL buttons 41,42 simultaneously. Pressing these buttons 41, 42 again toggles the lock status of the keypads 19 addressed below the master.

As understood in digital communications, the present invention is in a system command format which provides bits for (1) destination address for the specific base unit 21; (2) source address for the specific PL 11 that is sending a command; (3) a length-of-packet bit; (4) command bits; (5) data bits; and (6) two cyclic redundancy checks as known standards.

Autotrack Options

The PL keypad 19 can be configured to support automatic tracking or autotracking. This feature provides for automatic subject location in the area. To setup an autotracking keypad 19, a base unit 21 is selected and placed in the autotrack mode by pressing the MY TURN button 41 on the keypad. The base unit 21 then tracks the keypad 19 and the user adjusts the desired field of view of the camera 23 using the zoom, focus, iris, framing, and tracking windows commands. The store command is then sent to the appropriate devices from the PL 11 when the MY TURN button 41 is pressed for 3 seconds. When the user issues the MY TURN command, the selected base unit 21 will locate and place the user in the desired field of view whatever location the user is situated in the area.

The PLs 11 can be configured to issue several types of autotrack commands when the MY TURN button 41 is pressed. The specific autotrack command is determined by the keypad 19 setup. When the

first type (Type 1) of autotrack command is issued from the PL 11 the system invokes autotrack on the selected base unit 21, locates and places the user in the desired field of view, and then ceases to autotrack (see Flowchart 7). A Type 2 command enables autotrack, places the user in the desired field of view and continues to autotrack the PL 11 movements as long as the MY TURN button 41 is pressed (see Flowchart 8). Type 3 engages autotrack as before, puts the user in the desired field of view, and continues to autotrack until another autotrack command is issued by another PL 11. If the same PL 11 issues the MY TURN command, autotrack is toggled off. If another PL 11 MY TURN button 41 is pressed, the system autotracks the latter PL 11 (see Flowchart 9).

Audio Options

Each PL keypad 19 can contain audio circuitry 16. The micro-controller 12 has an electronic switch to enable/disable the local keypad audio signal creating a multiple of operating options. The first audio option configures the system to enable all keypad audio inputs continuously, giving the system audio output 25 (FIG. 3) the summation of the audio signals of each keypad 19. A second option allows the system to enable the audio from active field of view keypad 19 only, while disabling all other keypads 19. With only one audio input active, true sound-at-the-source is produced. A third option enables audio inputs by address range. In this configuration, selected groups of users could speak and be heard simultaneously. The groups would be determined by the active field of view keypad 19 address and an associated pre-programmed address range.

In both the tracking/distance and audio options the PLs 11 being used will have the appropriate keypad 19 and indicating lights 19' as needed.

FIGS. 15 and 16 represent schematics of the basic electronic circuitry used in all PL devices. A switch bank provides that the keypad 19 include as many as 23 switches for use in operation. Indicating lights 19' are 8 in number. The number of switches in a keypad 19 and lights in the indication 19' actually used depend

upon the specific PL 11 that is being used. The chips 46-52 are all conventional devices known to the art and include microcomputer 12 (U1) NV RAM (U2); switch multiplexer (U3); and power up/reset (U5). Coupling circuit 53 is also standard. In FIG. 16 59 is a standard RS-485 transceiver. Mic 54 output is controlled by switch 55. IR output is controlled via switch 58. Power is controlled via switch 56.

The IR tracking/distance option 17 includes as many detectors 57 and associated circuits as are necessary in the circumstances.

FIG. 17 includes a director's PL 11 that utilizes the full capability of the PL 11 electronics of FIGS. 5, 15 and 16. This device is substantially similar to the device in copending application Serial No. 08/078,434 referenced above.

Location preset buttons 64 are 4 in number (but not limited to 4) and are used with SET switch 65 to establish four preset locations in the device memory. Switches 66-70 are used in programming the system or 10'. Switch 71 is a conventional ZOOM rocker switch. START/STOP switch and Z1 and Z2 switches 73 and 74 are also used in programming. Autotrack switch 75, FAST and SLOW switches and STEALTH switch are as discussed in the copending application Serial No. 08/078,434.

It is important to note that the optical functions discussed hereinabove can be dealt with electronically in some CCD cameras. One of the principal objectives of the present invention is multi-user control of the field of view of one or more cameras. The field of view or frame represents the selectable portion of the total image physically available to a camera that is supplied as an output by the camera. That is, not everything within the physical range of a camera lens is necessarily "seen" by the camera at a particular time and camera lens setting and thus cannot be supplied as an output from the camera. The use of "zoom functions" that may require changes in the optical magnification of the camera lens is a case in point. The movement of a ZOOM lens into a "tighter" shot results in significantly less image "seen" by the camera with respect to the total image physically available at other lens

positions. Also, the field of view of a camera changes with position as is the case in the present system when the automatic tracking option is in use. The objective is to control all the variables that define the field of view from (1) position in the PAN and TILT planes to (2) camera control, such as ZOOM, FOCUS, IRIS, SHUTTER, GAIN, WHITE BALANCE, and to include the control of these variables of the system.

With reference again to FIG. 1, IMAGE switches 39 and 40 are programmed for use with other keypad 19 switches to provide for control of the iris, focus, shutter speed, gain and white balance variables of the associated camera 23. (As shown clearly in Table I).

TABLE I

Zoom*	Zoom Telephoto	Gain*	Gain -12db
	Zoom Wide		Gain -6db
	Zoom Stop		Gain -3db
	Zoom Position		Gain 0db
	Zoom Speed		Gain +3db
Focus*			Gain +6db
	Focus Near		Gain +12db
	Focus Far		Gain +18db
	Focus Stop		Gain Manual
	Focus Position		Gain Auto
	Focus Speed	White Balance*	White Balance Manual
	Focus Manual		White Balance Auto
Iris*	Focus Auto		White Balance Indoor
	Iris Manual		White Balance Fluorescent
	Iris Auto		White Balance Outdoor
	Iris Position		White Balance Position
	Iris Speed	* Camera Image Variables	
Shutter*			
	Shutter Speed		
	Shutter Speed Manual		
	Shutter Speed Auto		

In one embodiment of the PL 11, a master override switch 60 is provided along with an associated indicating light 61.

While the invention has been described with respect to certain specific embodiments it will be appreciated that many modifications and changes may be made by those skilled in the art without departing from the spirit of the invention. It is intended, therefore, by the appended claims to cover all such modifications and changes as fall within the true spirit and scope of the invention.

What is claimed as new and what it is desired to secure by Letters Patent of the United States is:

1. A method of controlling the field of view controls of a camera in a system including a camera, a means for controlling the field of view variables of the camera and at least two remote control devices capable of sending commands to the means for controlling the field of view variables of the camera comprising the steps of:

A. remembering at least two specific fields of view of the camera;

B. issuing a field of view command from at least one remote control device; and

C. moving the field of view of the camera to one of the fields of view remembered in step A.

B

2. The method of Claim 1 wherein step A includes the steps of:

D. issuing commands from each of the remote control devices to remember different fields of view of the camera; and

E. remembering the remote control device that issued the respective command.

3. The method of Claim 2 wherein step C includes the step of:

F. moving the field of view of the camera to the field of view remembered in step D associated with the remembered remote control device of step E that issued the respective command.

4. The method of Claim 1 wherein step A includes the step of:

D. remembering the position of the camera with respect to a known reference.

5. The method of Claim 4 wherein step D includes the step of:

E. remembering the position in a first plane.

6. The method of Claim 4 wherein step D includes the step of:

E. remembering the position of the camera in two planes.

7. The method of Claim 1 wherein step A includes the step of:
 - D. remembering the zoom perspective of the camera.
8. The method of Claim 1 wherein step A includes the step of:
 - D. remembering the iris position of the camera.
9. The method of Claim 1 wherein step A includes the steps of:
 - D. remembering the position of the camera in at least one plane;
 - E. remembering the zoom perspective of the camera; and
 - F. remembering the iris position of the camera.
10. The method of Claim 9 wherein step C includes the steps of:
 - G. moving the position of the camera to the remembered position of step D;
 - H. changing the zoom perspective of the camera to the remembered perspective of step E; and
 - I. moving the iris position of the camera to the remembered position of step F.
11. The method of Claim 3 further including the step of:
 - G. issuing a command by one of the remote control devices to override commands from other remote control devices affecting the field of view of the camera.
12. A method of controlling the field of view of a camera in an automatic tracking system including a camera, a means for controlling the variables that define the field of view of the camera and at least two remote control devices automatically trackable by the tracking system and capable of sending commands to the means for controlling the field of view of the camera comprising the steps of:

- A. automatically tracking at least one remote control device;
- B. remembering at least two fields of view of the camera;
- C. issuing a field of view variable command from at least one of the remote control devices; and
- D. changing at least one of the field of view variables defining the camera field of view to change the field of the camera to a field of view remembered in step B.

13. The method of Claim 12 wherein step B includes the steps of:

- E. issuing commands from each of the remote control devices to remember different fields of view of the camera; and
- F. remembering the remote control device that issued the respective command.

14. The method of Claim 13 wherein step D includes the step of:

- G. changing the field of view of the camera to the field of view remembered in step E associated with the remembered remote control device of step F that issued the respective commands.

15. The method of Claim 12 wherein step B includes the step of:

- E. remembering the position of the camera with respect to a known reference.

16. The method of Claim 15 wherein step E includes the step of:

- F. remembering the position in a first plane.

17. The method of Claim 15 wherein step E includes the step of:

- F. remembering the position of the camera in two planes.

18. The method of Claim 12 wherein step B includes the step of:

- E. remembering the zoom perspective of the camera.

19. The method of Claim 12 wherein step B includes the step of:

20. The method of Claim 12 wherein step B includes the steps of:

20. The method of Claim 12 wherein step B includes the steps of:

E. remembering the position of the camera in at least

F. remembering the zoom perspective of the camera; and

F. remembering the zoom perspective of the camera; and

G. remembering the iris position of the camera.

21. The method of Claim 20 wherein step D includes the steps of:

H. ceasing the automatic tracking of a remote control

```
device;
```

I. moving the position of the camera to the remembered

position of step E;

J. changing the zoom perspective of the camera to the

remembered perspective of step F; and

K. moving the iris position of the camera to the

remembered position of step G.

22. The method of Claim 12 wherein step A includes the step of:

E. issuing a command by a remote control device to

provide for automatic tracking of the remote control device.

23. The method of Claim 12 wherein step A includes the step of:

E. issuing a command by a remote control device to

provide for automatic tracking of the remote control device for as long as the command is being issued.

long as the command is being issued.

24. The method of Claim 12 wherein step A includes the steps of:

E. issuing a command by a first remote control device to

provide for automatic tracking of the first remote control device;

and

F. issuing a command by a second remote control device to provide for automatic tracking of the second remote control device and the cessation of automatic tracking of the first remote control device.

25. The method of Claim 12 wherein step A includes the steps of:

E. issuing a command by a remote control device to provide for automatic tracking of the remote control device by tracking system until the tracking system is substantially aligned with the remote control device; and

F. ceasing the automatic tracking of the remote control device that issued the command.

26. The method of Claim 14 wherein step A includes the step of:

H. issuing a command by a remote control device to provide for automatic tracking of the remote control device.

27. The method of Claim 26 wherein step G includes the step of:

H. changing the field of view to the field of view remembered in step F for the remote control device that issued the command for tracking.

28. A method of controlling the field of view controls of each camera in a system including at least two cameras, a means for controlling the variables that define the field of view of each camera and at least two remote control devices capable of sending commands to each means for controlling the field of view variables of the respective camera comprising the steps of:

A. remembering at least one field of view of each camera;

B. issuing a field of view variable command from at least one of the remote control devices to the means of controlling the cameras; and

C. changing the field of view variables of the camera associated with the field of view remembered in step A to provide the field of view remembered in step A.

29. The method of Claim 28 wherein step A includes the steps of:

D. issuing commands from each of the remote control devices to remember a different field of view of the camera; and

E. remembering the remote control device that issued the respective command.

30. The method of Claim 29 wherein step C includes the step of:

F. changing the field of view of the respective camera to the field of view remembered in step D associated with remembered remote control device of step E that issued the respective command.

31. The method of Claim 29 wherein step A includes the step of:

D. remembering the position of each camera with respect to a known reference.

32. The method of Claim 31 wherein step D includes the step of:

E. remembering the position of each camera in two planes.

33. The method of Claim 29 wherein step A includes the step of:

D. remembering the zoom perspective of each camera.

34. The method of Claim 29 wherein step A includes the step of:

D. remembering the iris position of each camera.

35. The method of Claim 29 wherein step A includes the steps of:

D. remembering the position of each camera in at least one plane;

- E. remembering the zoom perspective of each camera; and
- F. remembering the iris position of each camera.

36. The method of Claim 35 wherein step C includes the steps of:

- G. changing the position of the camera associated with the remembered field of view of step D to the remembered position;

- H. changing the zoom perspective of the camera associated with the remembered field of view to the remembered perspective of step E; and

- I. changing the iris position of the camera associated with the remembered field of view of step F to the remembered position.

37. The method of Claim 31 further including the step of:

- G. issuing a command by one of the remote control devices to override commands from other remote control devices affecting the field of view of any camera.

38. A method of controlling the field of view controls of each camera in a automatic tracking system including at least two cameras, a means for controlling the variables that define the field of view of each camera, selectively operable switch means receiving the video output of each camera and providing an output signal, and at least two remote control devices automatically trackable by the tracking system capable of sending commands to each means for controlling the field of view variables of the respective camera and the tracking system comprising the steps of:

- A. remembering at least one field of view of each camera;

- B. issuing a field of view variable command from at least one of the remote control devices to the means of controlling the cameras; and

C. changing the field of view variables of the camera associated with the field of view remembered in step A to provide the field of view remembered in step A.

39. The method of Claim 38 further including the step of:

D. issuing a command by a remote control device to provide for automatic tracking of the remote control device by a camera.

40. The method of Claim 39 wherein step D includes the step of:

E. selectively switching the switch means to provide that the switch means output signal is the video signal from the camera tracking the remote unit that issued the command.

41. The method of Claim 38 wherein step A includes the step of:

D. remembering a specific field of view that can be recalled by a command from any remote control device.

42. The method of Claim 41 wherein step B includes the step of:

E. issuing a command by a remote control device to change the field of view to the specific field of view remembered in step D.

43. A system for controlling the field of view control variables of a camera comprising a camera, control means for adjusting said field of view control variables of said camera and at least two remote control devices for sending commands to said control means thereby adjusting said field of view.

44. The system as defined in Claim 43 wherein said field of view control variables of said camera include a position of the camera field of view with respect to a known reference defined by said control means, said control means including movable means for movement of said camera in at least one plane.

45. The system as defined in Claim 43 wherein said field of view controls of said camera includes the perspective of said camera, said control means changing said perspective in response to a first command of one said remote control device.

46. The system as defined in Claim 43 wherein said control means includes memory means for remembering each field of view command sent by each said remote control device, said field of view command including identity information indicative of respective said remote control device which sent said command, said control means remembering said identity information to enable said field of view to be moved to one of the fields of view remembered.

47. A system for controlling the field of view controls of a camera comprising at least two cameras, control means for controlling the variables that define the field of view of each said camera, at least two remote control devices capable of sending commands to said control means, said control means further including automatic tracking system means for tracking each remote control device by said tracking system means, said control means including memory means for remembering each said command received and information indicative of which said remote control unit is sending said command, further including selectively operable video signal switch means for receiving video output signal from each said camera and providing a video switch output signal in response to which said video output signal is selected, said video signal switch means being operably connected to said control means, said control means being responsive to commands from each said remote control device for selectively operating said video signal switch means to select a respective video output signal as said video switch output signal.

48. A method of controlling the field of view control variables of a camera in a system including a camera, a means for adjusting

the field of view control variables of the camera, and at least two remote control devices for sending commands to the control means for adjusting the field of view:

A. issuing a field of view command from at least one remote control device; and

B. adjusting the field of view of the camera in response to the command of step A.

49. The method of Claim 48 further comprising the step of:

C. overriding a field of view command from the one remote control device by a field of view command from the other remote control device.

50. A method of controlling the field of view control variables of each camera in a system including at least two cameras, a means for adjusting the field of view control variables of each camera, and at least two remote control devices for sending commands to the control means for adjusting the respective field of view:

A. issuing a field of view command from at least one remote control device to the control means;

B. adjusting the field of view of the respective camera in response to the command of step A; and

C. remembering the remote control device that issued a respective command.

Added
B1

Add Fil

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PATENT

D-6524

MULTI-USER CAMERA CONTROL SYSTEM AND METHOD

ABSTRACT OF THE DISCLOSURE

A multi-user camera control system with automatic tracking capability for use in video conferencing and similar applications includes a plurality of personal controllers, one for each person utilizing the system. Each personal controller includes a micro-computer controlled keypad and associated communication circuitry as well as optional audio and tracking capability. The controller is programmed with the capability to send commands to the camera system.

The system employs programmed, automatically trackable controllers for issuing commands to control most of the functions of a camera including lens operation. Personal locator devices are electrically connected and can be programmed as a master and as slaves. In addition, a master having override features may be provided, as well as a director's locator device for system wide control.

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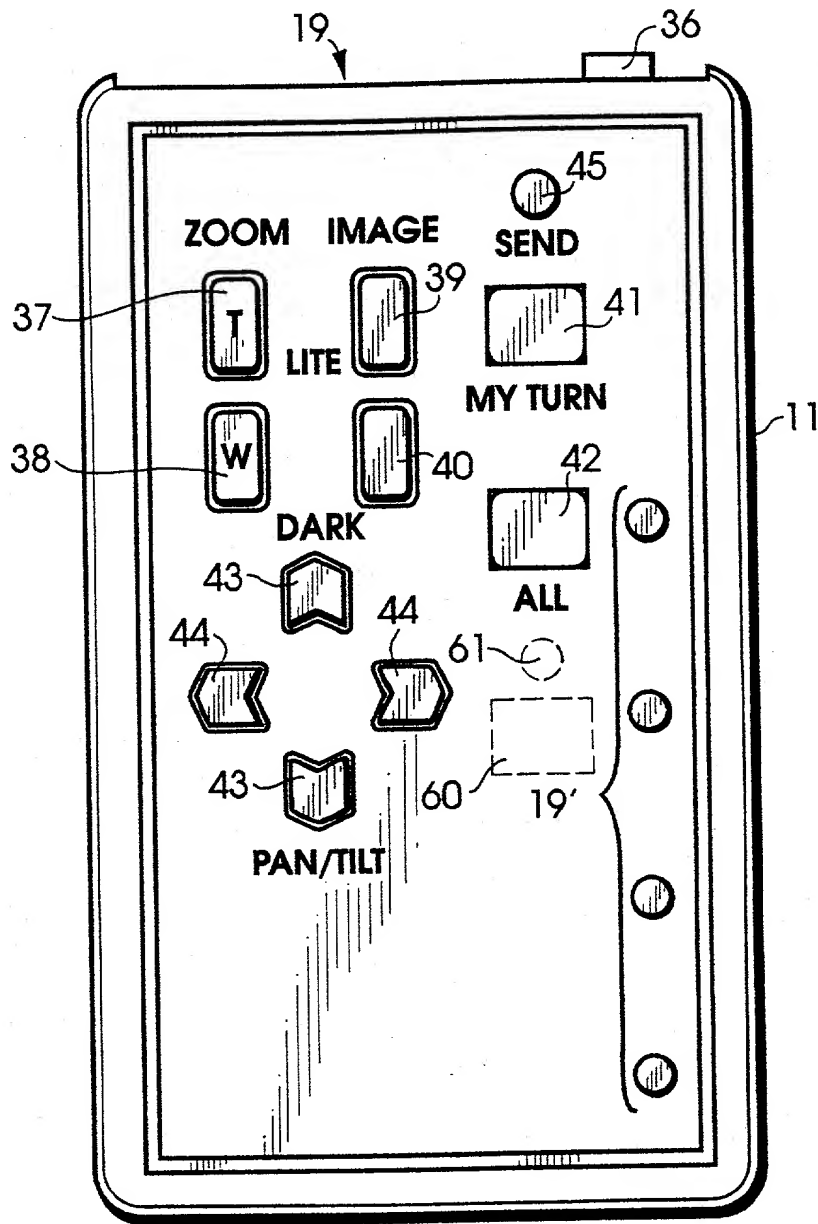


FIG 1

The diagram shows a portable electronic device 11 with the following components and connections:

- Micro-Controller 12**: A dashed rectangular block in the upper left.
- User Interface 19**: A dashed rectangular block in the upper right, containing a sub-block 19'.
- Audio Option 16**: A dashed rectangular block in the center.
- Tracking/Distance Option 17**: A dashed rectangular block below the audio option.
- RS-485 Transceiver 14**: A dashed rectangular block in the lower left.
- Comm Interface 13**: A dashed rectangular block in the lower right.
- External Interface 20**: A dashed rectangular block on the left side, connected to the RS-485 Transceiver 14 via an **IN** arrow and an **OUT** arrow. The connection points are labeled 18.
- Antenna 36**: A small rectangular component at the top of the device.

FIG 2

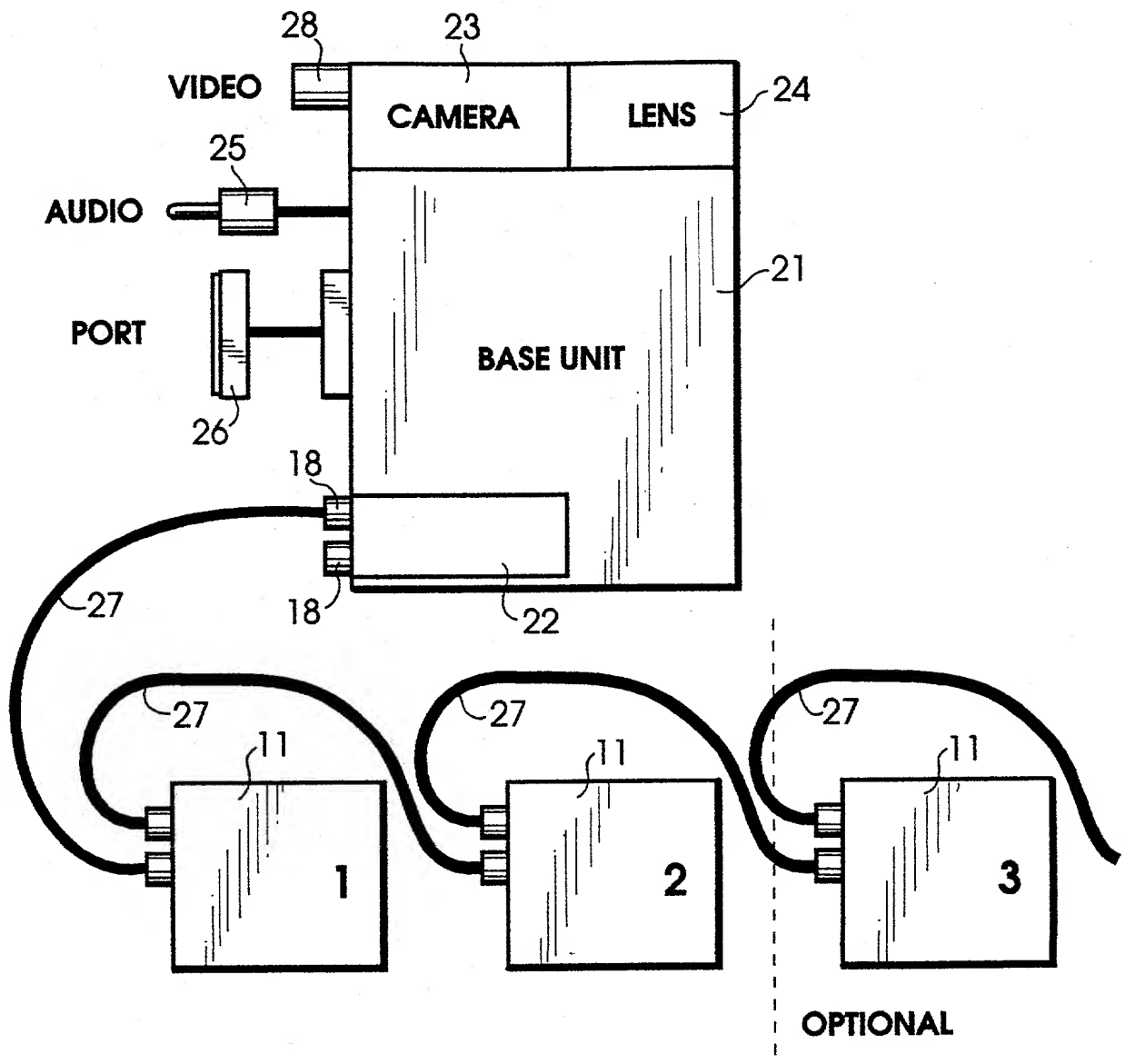


FIG 3

The diagram illustrates a video recording system architecture. A central **BASE UNIT** (21) contains a **CAMERA** (23) and a **LENS** (24). It features input ports for **VIDEO** (25), **AUDIO**, and a **PORT** (26). A **VIDEO SWITCHER** (31) is connected to the BASE UNIT via a cable (29). The switcher has multiple **VIDEO INPUTS** (35) and a **VIDEO OUT** (32). The system is shown with three optional camera inputs (1, 2, 3) connected to the switcher via cables (27). The entire system is enclosed in a dashed-line boundary.

FIG 4

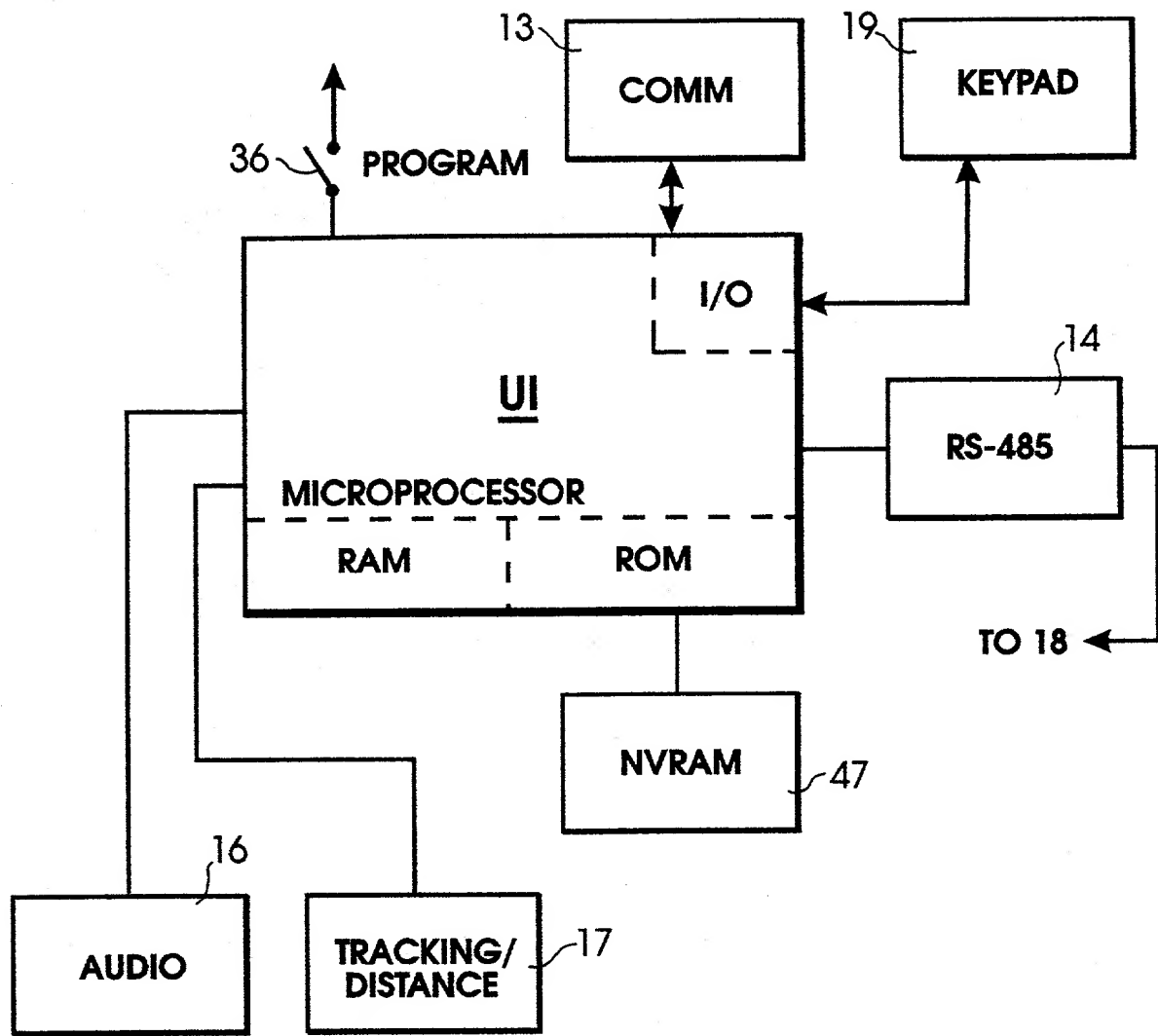
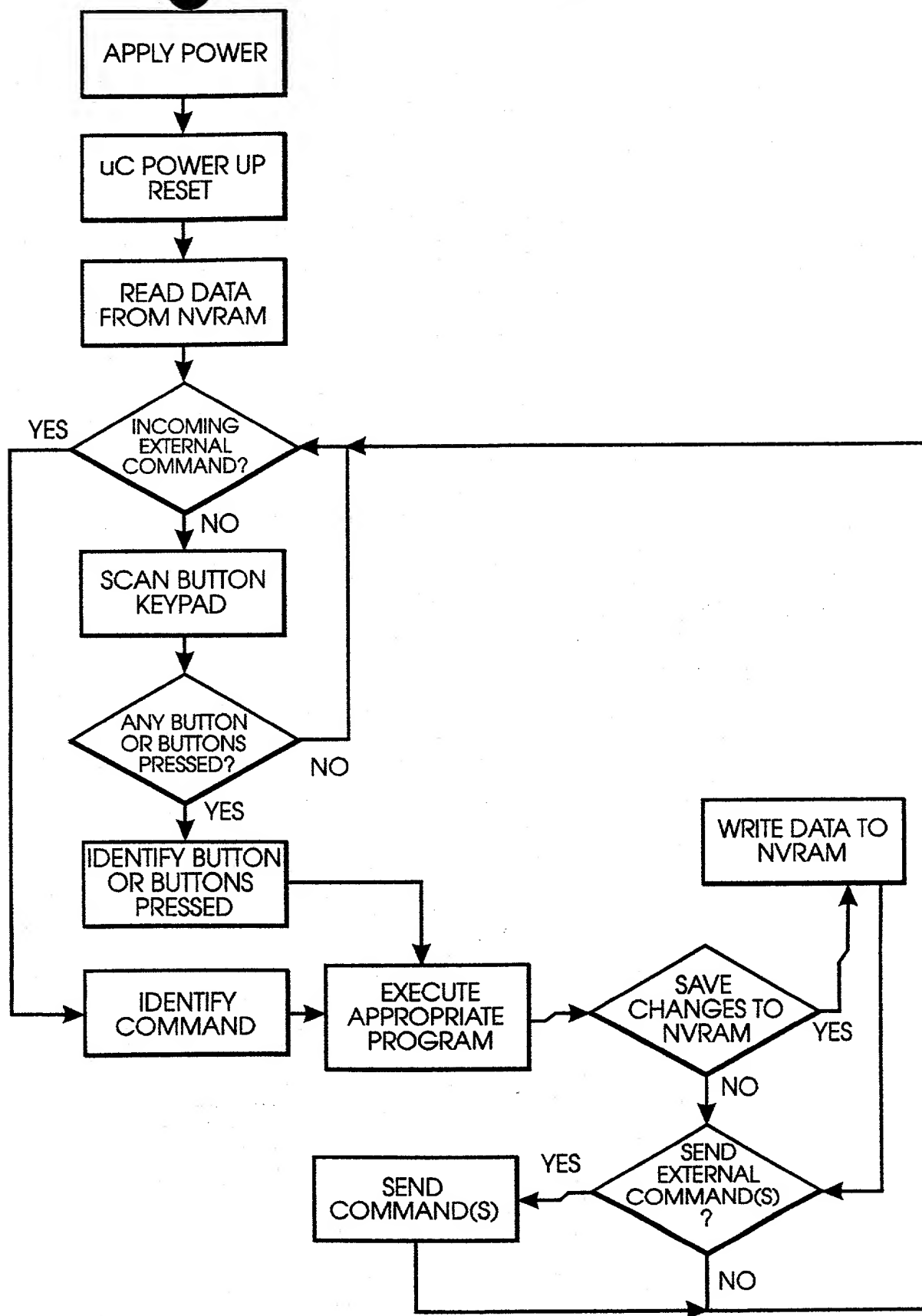


FIG 5

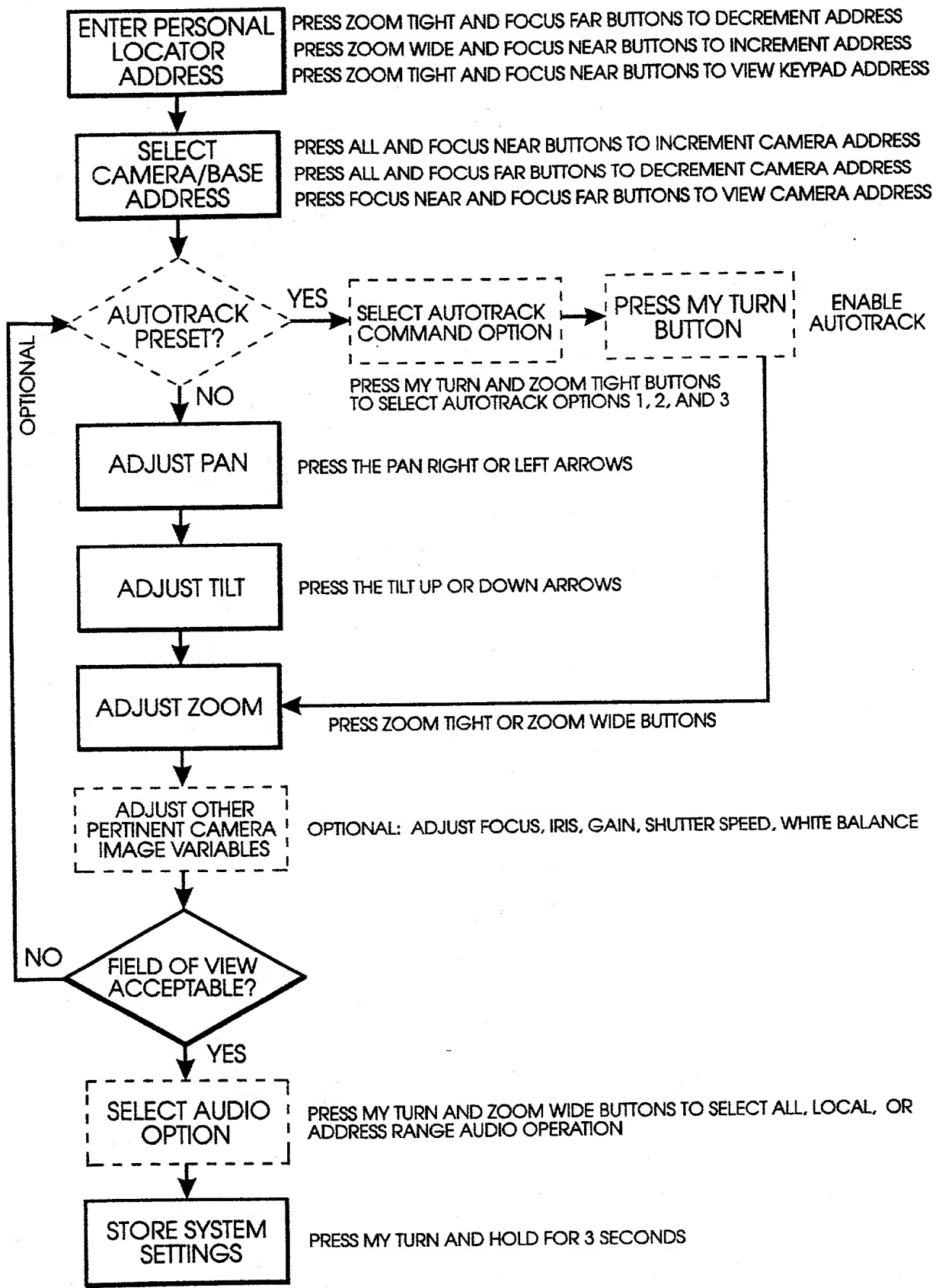
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FLOWCHART 1

FIG 6

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FLOWCHART 2

FIG 7

```

graph TD
    A[SELECT CAMERA ADDRESS] --> B[ADJUST PAN]
    B --> C[ADJUST TILT]
    C --> D[ADJUST ZOOM]
    D --> E[ADJUST OTHER PERTINENT CAMERA IMAGE VARIABLES]
    E --> F{FIELD OF VIEW ACCEPTABLE?}
    F -- NO --> B
    F -- YES --> G[STORE SYSTEM SETTINGS]

```

SELECT CAMERA ADDRESS
PRESS ALL AND FOCUS NEAR BUTTONS TO INCREMENT CAMERA ADDRESS
PRESS ALL AND FOCUS FAR BUTTONS TO DECREMENT CAMERA ADDRESS
PRESS FOCUS NEAR AND FOCUS FAR BUTTONS TO VIEW CAMERA ADDRESS

ADJUST PAN
PRESS THE PAN RIGHT OR LEFT ARROWS

ADJUST TILT
PRESS THE TILT UP OR DOWN ARROWS

ADJUST ZOOM
PRESS ZOOM TIGHT OR ZOOM WIDE BUTTONS

ADJUST OTHER PERTINENT CAMERA IMAGE VARIABLES
OPTIONAL: ADJUST FOCUS, IRIS, GAIN, SHUTTER SPEED, WHITE BALANCE

FIELD OF VIEW ACCEPTABLE?
NO
YES

STORE SYSTEM SETTINGS
PRESS ALL AND HOLD FOR 3 SECONDS

FIG 8

```

graph TD
    Start([START]) --> D1{INCOMING EXTERNAL COMMAND?}
    D1 -- YES --> D2{ANY BUTTON OR BUTTONS PRESSED?}
    D1 -- NO --> D2
    D2 -- YES --> I1[IDENTIFY BUTTON OR BUTTONS PRESSED]
    I1 --> E1[EXECUTE APPROPRIATE PROGRAM]
    I1 -- MY TURN BUTTON PRESSED --> E1
    E1 --> D3{SAVE CHANGES TO NVRAM?}
    D3 -- YES --> W1[WRITE DATA TO NVRAM]
    D3 -- NO --> D4{SEND EXTERNAL COMMANDS?}
    W1 --> D4
    D4 -- YES --> S1[SEND COMMAND(S)]
    D4 -- NO --> D5{INCOMING EXTERNAL COMMAND?}
    S1 -- COMMUNICATION BUS --> D5
    D5 -- NO --> D2
    D5 -- YES --> I2[IDENTIFY COMMAND]
    I2 --> D6{MY TURN PRESET COMMAND?}
    D6 -- NO --> E2[EXECUTE APPROPRIATE PROGRAM]
    E2 --> Exit([EXIT TO MAIN PROGRAM])
    D6 -- YES --> R1[RECALL MY TURN PRESET DATA]
    R1 --> M1[MOVE PAN AND TILT TO PRESET POSITION]
    M1 --> M2[MOVE CAMERA IMAGE VARIABLES TO PRESET POSITIONS]
    M2 --> S2[SEND COMMAND(S) TO VIDEO SWITCHER]
    S2 --> Exit
    S2 -- OPTIONAL --> D4
    Exit([ENTER FROM MAIN PROGRAM]) --> D5

```

FIG 9

INITIAL SETUP

FOLLOW SETUP FLOWCHART



ENTER PROGRAM
MODE

TURN PROGRAM SWITCH ON



SELECT MASTER
STATUS

PRESS MY TURN BUTTON FOR 3 SECONDS
(TOGGLES MASTER STATUS)



EXIT PROGRAM
MODE

TURN OFF PROGRAM SWITCH

FLOWCHART 5

FIG 10

[illegible]

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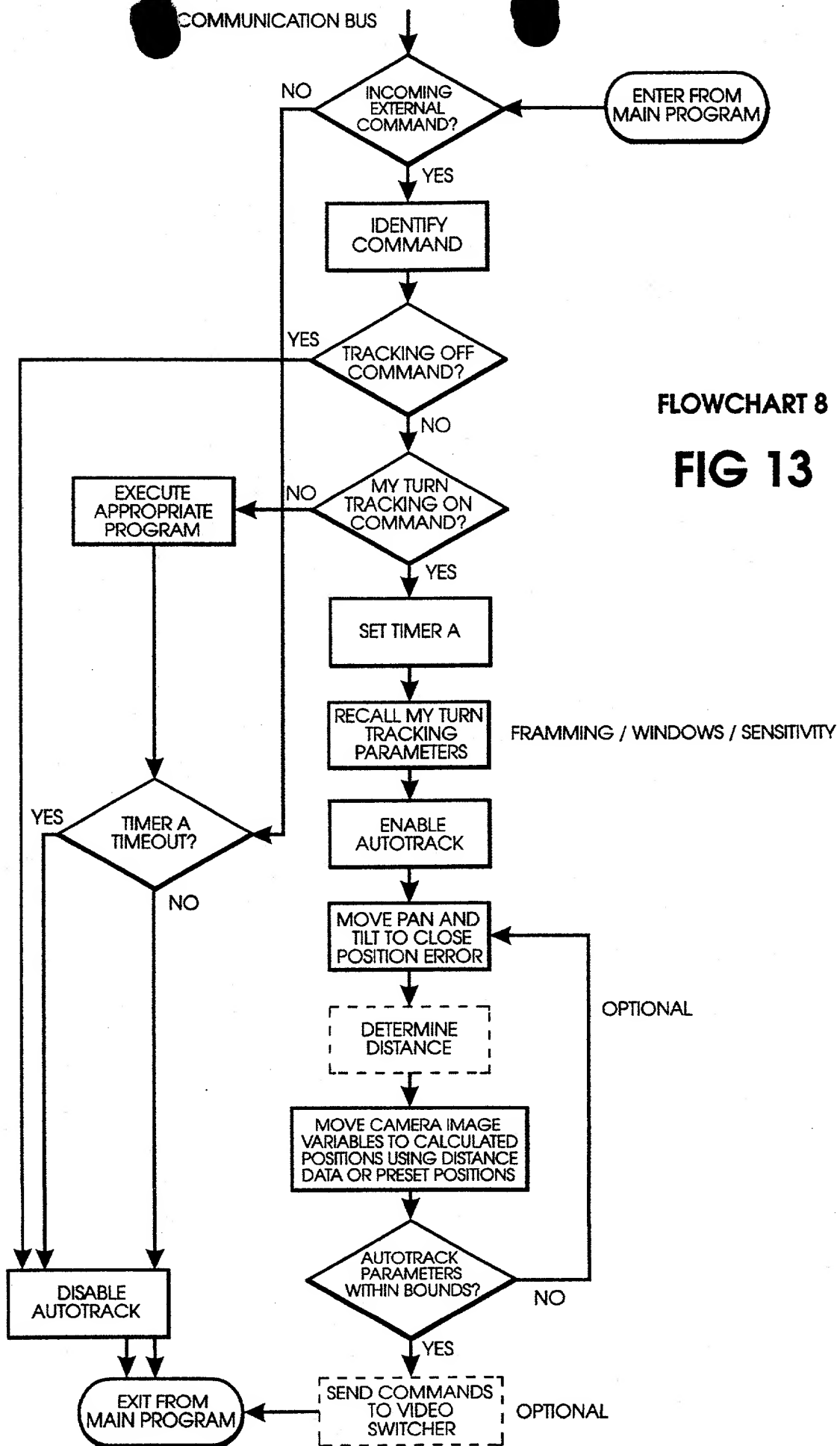
graph TD
    Start([START]) --> A[APPLY POWER]
    A --> B[μC POWER UP RESET]
    B --> C[READ DATA FROM NVRAM]
    C --> D{INCOMING EXTERNAL COMMAND?}
    D -- YES --> I[IDENTIFY COMMAND]
    D -- NO --> E[SCAN BUTTON KEYPAD]
    E --> F{ANY BUTTON OR BUTTONS PRESSED?}
    F -- YES --> G[IDENTIFY BUTTON OR BUTTONS PRESSED]
    F -- NO --> D
    G --> H[EXECUTE APPROPRIATE PROGRAM]
    H --> I
    H -- "MASTER MY TURN OR ALL BUTTON PRESSED" --> D
    I --> J{SAVE CHANGES TO NVRAM?}
    J -- YES --> K[WRITE DATA TO NVRAM]
    J -- NO --> L{SEND EXTERNAL COMMANDS?}
    K --> L
    L -- YES --> M[SEND COMMAND  
SEND LOCK OR UN-LOCK COMMAND(S)  
SEND COMMAND(S) TO SELECTED BASE UNIT]
    L -- NO --> D
    M --> D
    
```

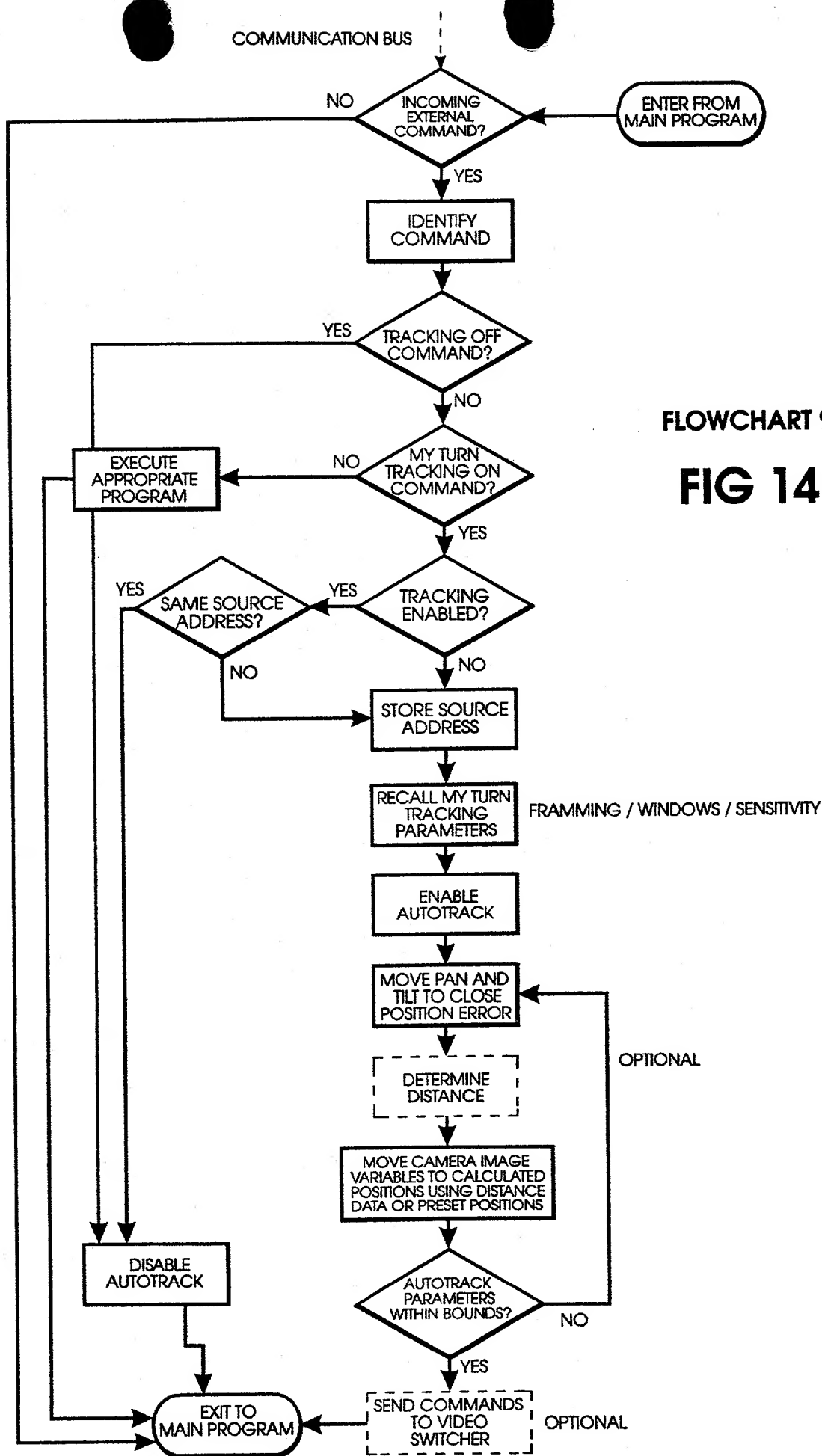
FIG 11

[illegible]

FIG 12

00000000



[illegible]



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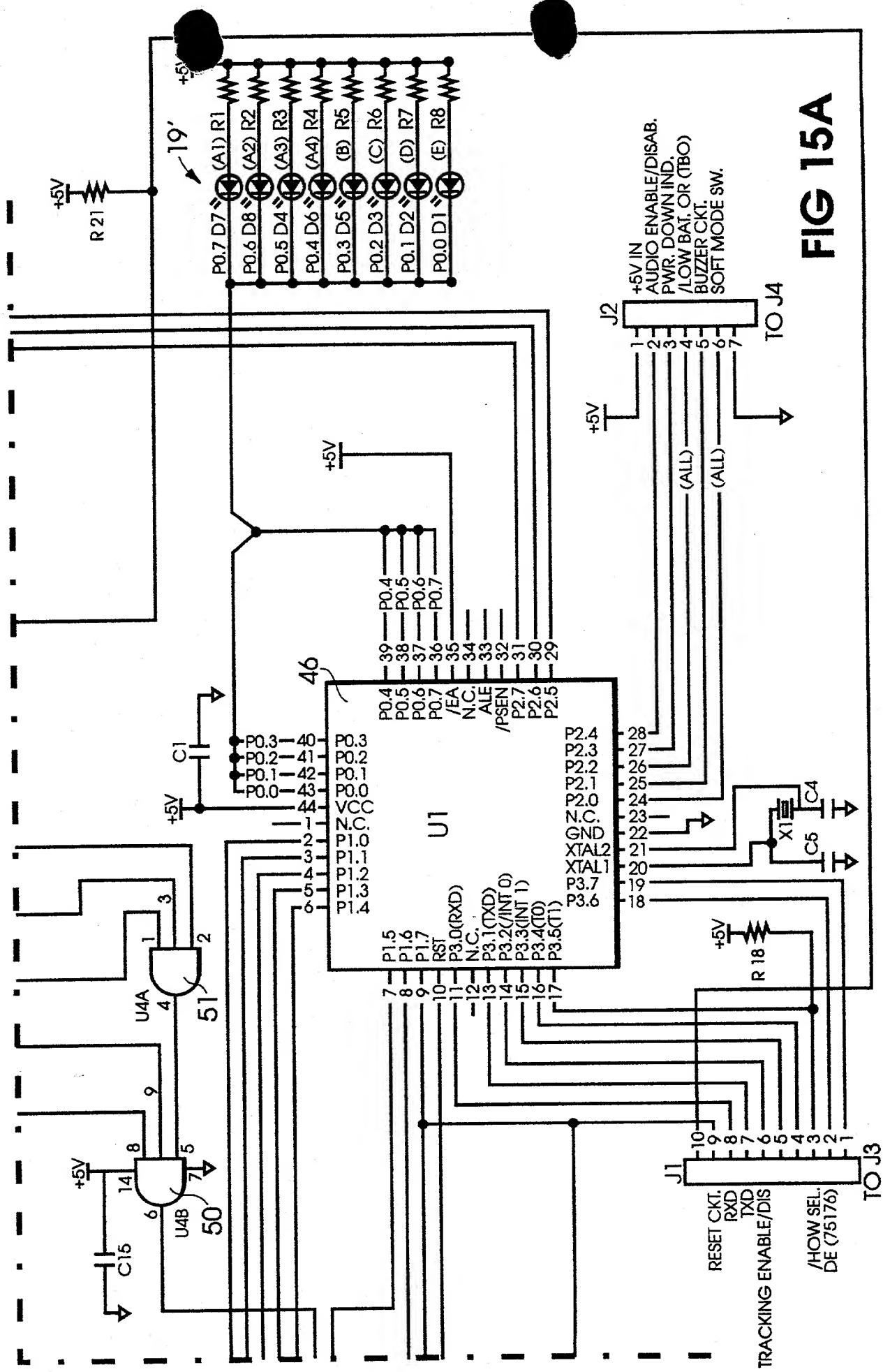


FIG 15A

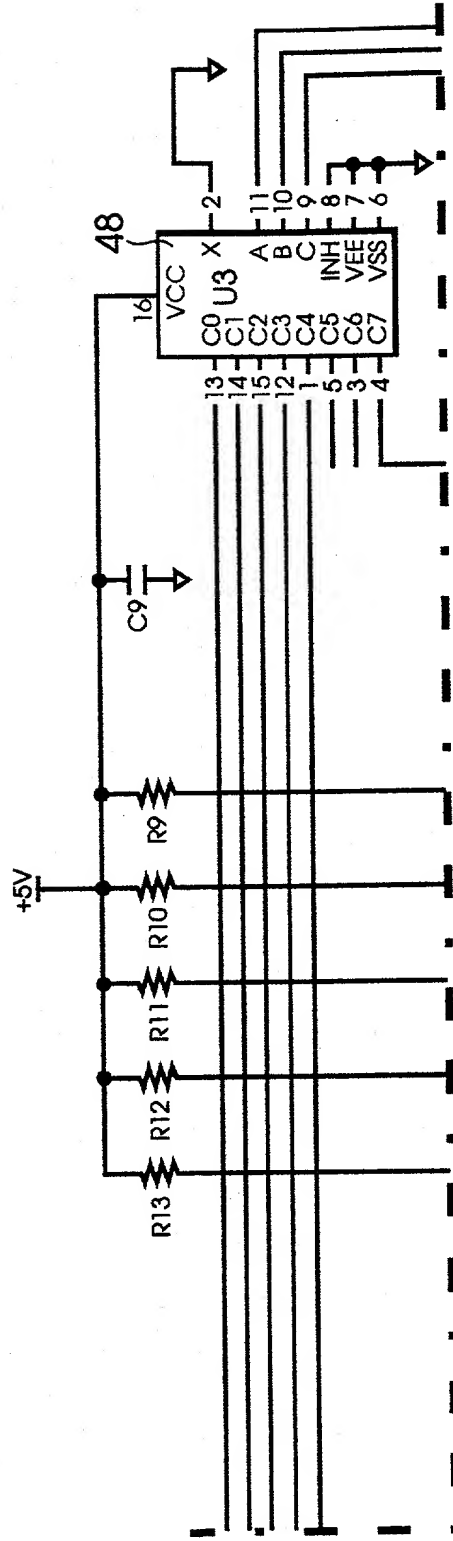
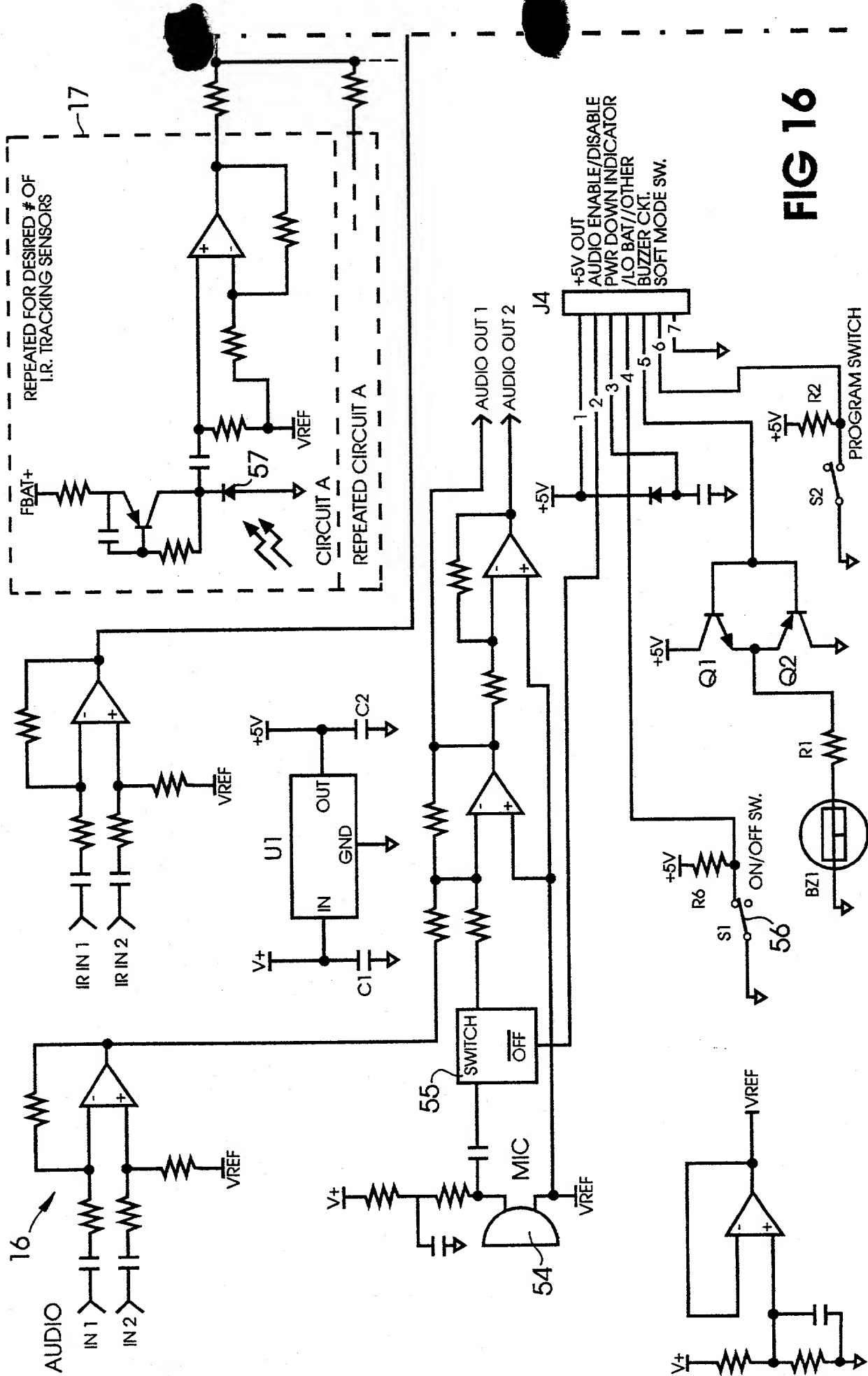
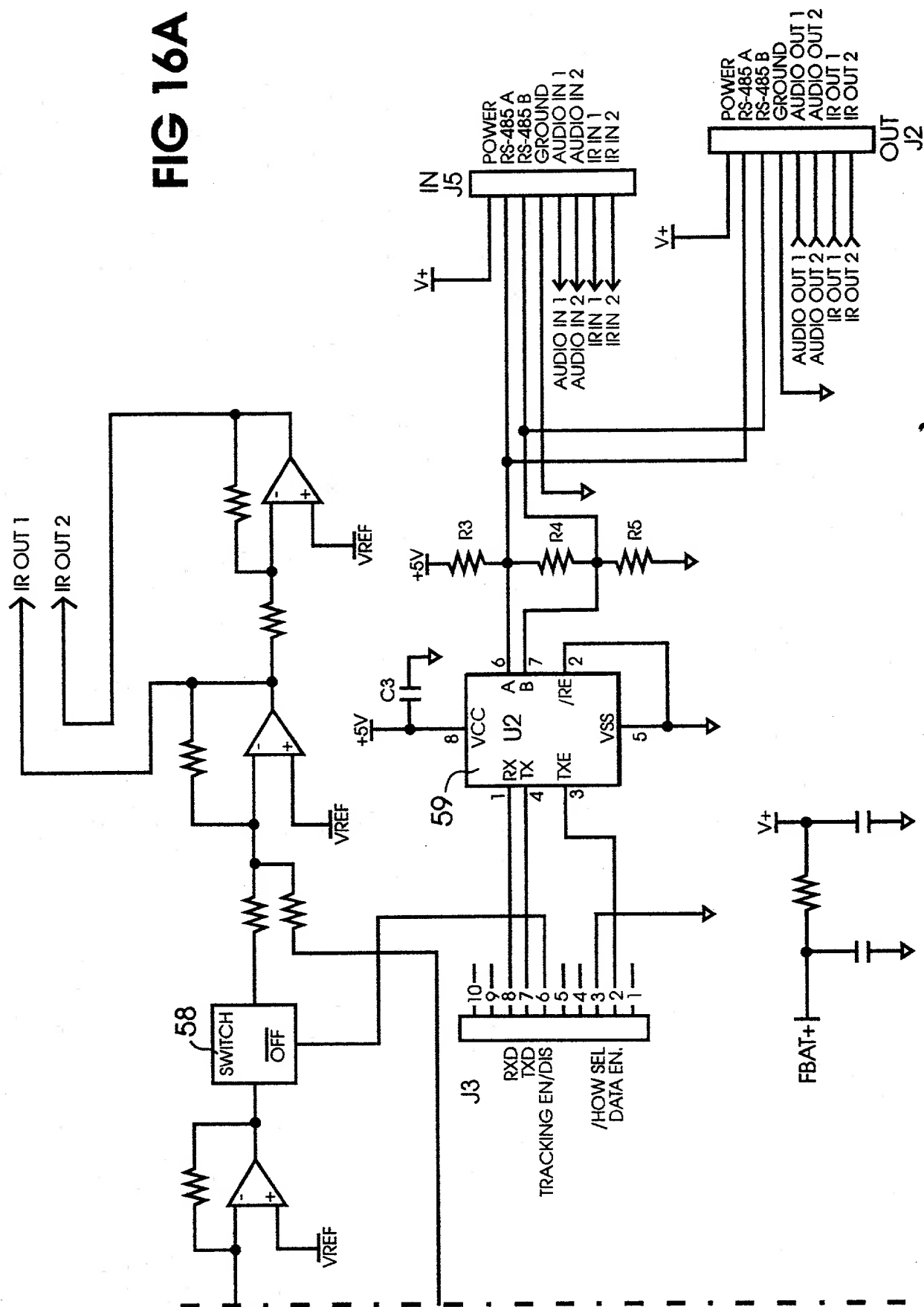


FIG 15B



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FIG 16A



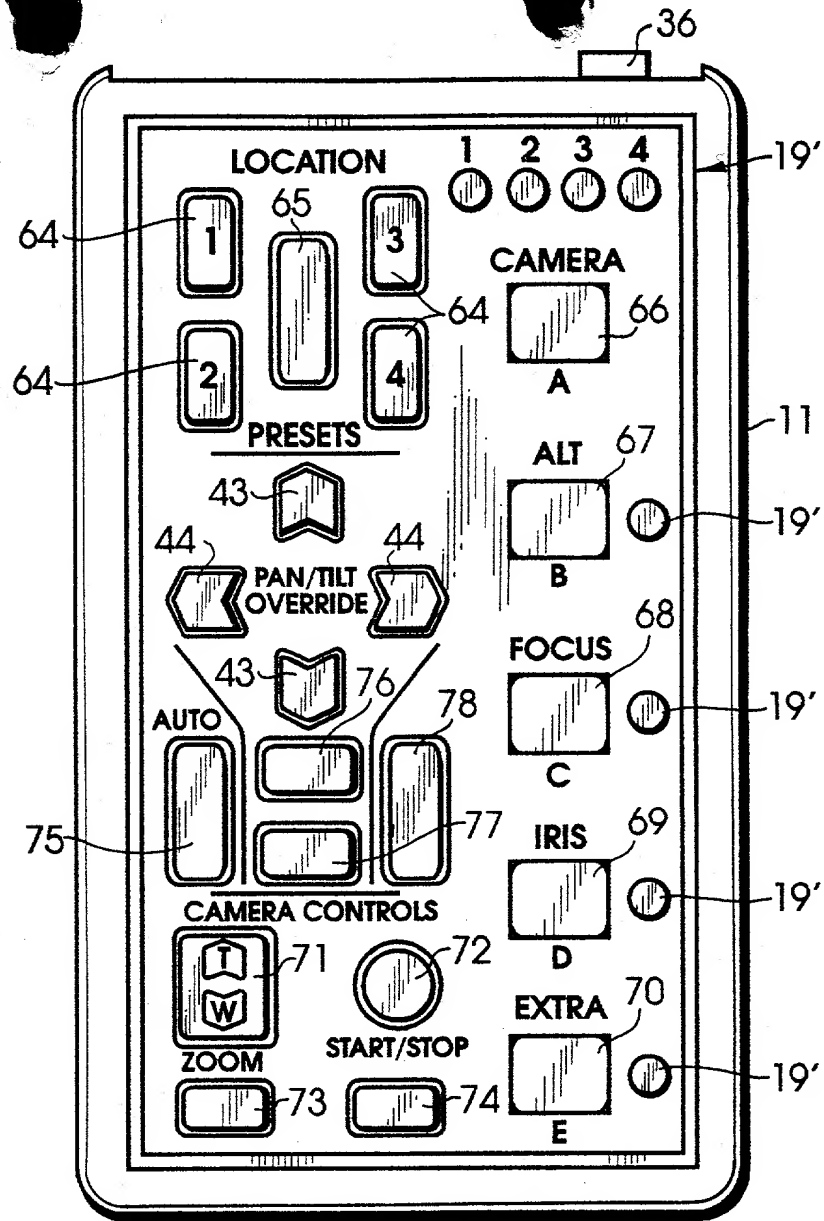


FIG 17

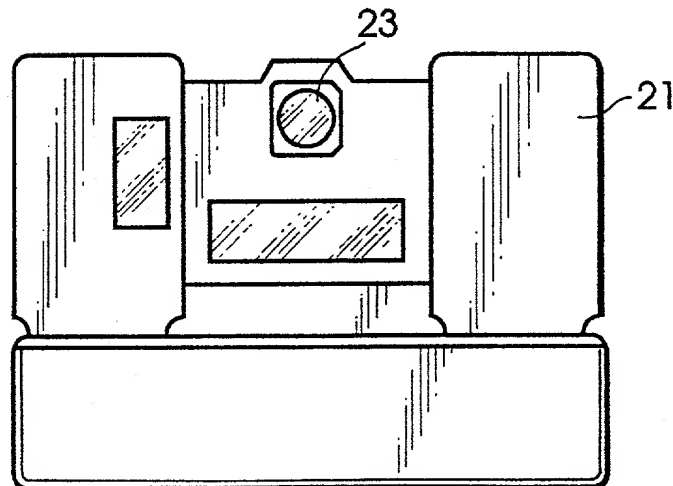


FIG 18

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

MULTI-USER CAMERA CONTROL SYSTEM AND METHOD
the specification of which

(check one)

☒ is attached hereto.

☐ was filed on _____ as

Application Serial No. _____

and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

(Number) _____ (Country) _____ (Day/Month/Year Filed) _____

☐ Yes ☐ No

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Arthur G. Yeager, Reg. No. 19,892

Earl L. Tyner, Reg. No. 17,045

112 West Adams St.

Send Correspondence to: Arthur G. Yeager, P.A.,/1305 Barnett Bank
Building, Jacksonville, FL 32202

Direct Telephone Calls to: (name and telephone number) Arthur G. Yeager (904) 355-9631

Full name of sole or first inventor	
Jeffrey L. Parker	
Inventor's signature	Date
<i>Jeffrey L. Parker</i>	June 6, 1994
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Citizenship	
U.S.A.	
Post Office Address	
2656 Riverport Drive North	
Jacksonville, Florida 32223	
Full name of second joint inventor, if any	
David F. Sorrells	
Second inventor's signature	Date
<i>David F. Sorrells</i>	June 6, 1994
Residence	
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Citizenship	
U.S.A.	
Post Office Address	
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Jacksonville, Florida 32223	

(Supply similar information and signature for third and subsequent joint inventors.)

Applicant or Patentee: Jeffrey L. Parker and David F. Sorrells

Serial or Patent No.: _____

Filed or Issued: _____

For: MULTI-USER CAMERA CONTROL SYSTEM AND METHOD

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(d) and 1.27(b))—INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled MULTI-USER CAMERA CONTROL SYSTEM AND METHOD

described in

- ☒ the specification filed herewith.
☐ application serial no. _____, filed _____
☐ patent no. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☐ no such person, concern, or organization
☒ persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

FULL NAME ParkerVision, Inc., a Florida corporationADDRESS 8493 Baymeadows WayJacksonville, Florida 32256

☐ INDIVIDUAL ☒ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____

ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____

ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Jeffrey L. Parker

Name of Inventor

[Signature]
 Signature of Inventor

June 6, 1994
 Date

David F. Sorrells

Name of Inventor

[Signature]
 Signature of Inventor

June 6, 1994
 Date

Name of Inventor

Signature of Inventor

Date

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Applicant or Patentee: Jeffrey L. Parker and David F. Sorrells
Serial or Patent No.: _____
Filed or Issued: _____
For: MULTI-USER CAMERA CONTROL SYSTEM AND METHOD

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) and 1.27(c))—SMALL BUSINESS CONCERN

I hereby declare that I am

- ☐ the owner of the small business concern identified below:
- ☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN ParkerVision, Inc., a Florida corporation
ADDRESS OF CONCERN 8493 Baymeadows Way
Jacksonville, Florida 32256

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third-party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed, to and remain with the small business concern identified above with regard to the invention, entitled

MULTI-USER CAMERA CONTROL SYSTEM AND METHOD

by inventor(s) Jeffrey L. Parker and David F. Sorrells

described in

- ☒ the specification filed herewith
- ☐ application serial no. _____, filed _____
- ☐ patent no. _____, issued _____

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

NAME _____

ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

NAME _____

ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small business entity is no longer appropriate. (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Jeffrey L. Parker
TITLE OF PERSON OTHER THAN OWNER President
ADDRESS OF PERSON SIGNING 2656 Riverport Drive, North
Jacksonville, Florida 32223

SIGNATURE 7/1/94 June 6, 1994

Date _____